The Journal of Speech Disorders

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PROGRAM

Twenty-Third Annual Conference of the American Speech Correction Association

HOTEL UTAH
SALT LAKE CITY, UTAH

The American Speech Correction Association will hold its 1947 convention December 28, 29, 30 and 31, in conjunction with the Speech Association of America, at the Hotel Utah, in Salt Lake City, Utah.

The meetings of officers and councillors are open to all members.

Short courses are arranged by the Committee on Education for the partial purpose of providing opportunities for advancement in membership. Credit in the amount of one semester hour is granted for each short course. Attendance at the lecture, an outline of the subject matter presented, and such subsequent bibliographical work as may be assigned by the instructor are the requirements for credit. No fee is charged.

Each speaker is required to present to his chairman a typewritten copy of his paper for publication in the *Journal of Speech Disorders.*

Sunday, December 28

2:00 p.m. Registration.
7:30 p.m. Meeting of officers and councillors of the Association.

Monday, December 29

8:00 a.m. Registration.
9:00 a.m. Joint meeting with S.A.A., W.S.A., A.E.T.A. and N.U.E.A. Lafayette Ballroom.
11:00 a.m. Meeting of officers and councillors of the Association. Pioneer Room.

12:15 p.m. Alumni luncheons.

TECHNIQUES FOR CORRECTION OF ORGANIC SPEECH DISORDERS
2:00 p.m., Junior Ballroom
Chairman: Robert Harrington, University of Denver

2:05 p.m. Present Concepts of Laryngeal Disease. *Francis L. Lederer, University of Illinois.*
2:30 p.m. The Rehabilitation of Laryngectomized Persons. *Warren Gardner, Western Reserve University.*
2:50 p.m. Twenty-Five Years of Cleft Palate Prosthesis. *Cloyd S. Harkins, Pennsylvania State College and Herbert Koepp-Baker, University of Illinois.*
3:15 p.m. Practical Techniques in Speech Training for Cleft Palate Cases. *Charlotte Wells, University of Missouri.*

3:30 p.m. Techniques in the Management of Aphasics. *Vivian M. Sheehan, University of Michigan.*
3:45 p.m. Anomalies of Tongue Functions in Cerebral Palsy. *Martin F. Palmer, University of Wichita.*
4:00 p.m. Adjournment.

TECHNIQUES FOR AURAL REHABILITATION
4:00 p.m., Junior Ballroom
Chairman: John C. Snidecor, University of California, Santa Barbara College

4:05 p.m. Evaluating the Efficiency of Group Screening Tests. *Hayes A. Newby, Stanford University.*
4:20 p.m. An Experimental Program of Hearing Aids and Training for a Group of Hard of Hearing Children. *D. E. Morley, University of Michigan.*
4:35 p.m. Some Practical Aspects of Hearing Aid Selection for Children. *Scott N. Reger, State University of Iowa.*
4:50 p.m. The Rehabilitation of Aurally Handicapped Children. *Florence M. Olsen, Central Institute for the Deaf.*
5:05 p.m. The Rehabilitation of the Aurally Handicapped by Training in Speech Reading. *Boris V. Morkovin, University of Southern California.*
5:20 p.m. Techniques in Educating Borderline Hearing Cases in the Public Schools. *Elvena Miller, Seattle Public Schools.*
5:35 p.m. Discussion.
5:45 p.m. Adjournment.

8:00 p.m. A.S.C.A. Business Meeting. Roof Garden.

Tuesday, December 30

RESEARCH IN AURAL REHABILITATION
9:00 a.m., Junior Ballroom
Chairman: S. Richard Silverman, Central Institute for the Deaf

9:05 a.m. Monaural vs. Binaural Threshold Levels for Normal and Hard of Hearing Subjects. *John W. Keys, University of Oklahoma.*
9:25 a.m. Neurophysiological Clues to Auditory Acuity. *Lee Doerfler, Northwestern University.*
9:45 a.m. The Reliability and Validity of Monitored Connected Discourse as a Test of the Threshold of Intelligibility. *George A. Falconer, Memphis Speech and Hearing Center.*
10:05 a.m. A New Magnetic Type Bone Conduction Hearing Aid Receiver. *John K. Duffy, Wisconsin State Department of Public Instruction.*
10:25 a.m. Progress in Research on Visible Speech. *George A. Kopp, University of Michigan.*
10:45 a.m. Adjournment.

SHORT COURSE: PSYCHOLOGICAL MANAGEMENT OF STUTTERERS
10:45 a.m., Jade Room
Instructor: Lee Edward Travis, University of Southern California

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10:45 a.m. Meeting of Officers and Councillors. President's Room.

12:00 m. Organ recital. Tabernacle.

1:00 p.m. Joint luncheon with S.A.A., W.S.A., A.E.T.A., and N.U.E.A. Lafayette Ballroom.

SPECIAL PROGRAMS OF SPEECH CORRECTION AND AURAL REHABILITATION
Joint Meeting with S.A.A.
2:45 p.m., Junior Ballroom
Chairman: Alonzo J. Morley, Brigham Young University

2:50 p.m. The Illinois Speech and Hearing Program. *Ray Graham, Illinois State Department of Education.*

3:05 p.m. A State Superintendent's View of Problems and Procedures in Initiating a State-Wide Speech and Hearing Program. *E. Allen Bateman, Utah State Department of Public Instruction.*
3:20 p.m. The Naval Aural Retraining Program. *Miriam D. Pauls, U. S. Naval Hospital, Philadelphia.*
3:35 p.m. The American Hearing Society Program. *Helen Scriver, American Hearing Society.*
3:50 p.m. The Veterans Administration's Program for Speech Correction and Aural Rehabilitation. *Merle Ansberry, Medical Rehabilitation Service, Veterans Administration.*
4.05 p.m. Organizing a Speech Clinic in a Small College. *Herold Lillywhite, Whittier College.*
4:20 p.m. Discussion.
4:30 p.m. Adjournment.

TECHNIQUES FOR CORRECTION OF FUNCTIONAL SPEECH DISORDERS
4:30 p.m., Jade Room
Chairman: Ernest H. Henrikson, University of Minnesota

4:35 p.m. Devices and Equipment Serviceable in Functional Therapy. *W. Arthur Cable, University of Arizona.*
4:50 p.m. The Importance of 'Follow-up' in the Correction of Functional Disorders. *Vivian I. Roe, Ft. Wayne Public Schools.*
5:05 p.m. The Role of the Parent in the Clinical Program. *Kenneth S. Wood, University of Oregon.*
5:20 p.m. Mental Hygiene in Action. *Ruth M. Clark, University of Denver, and Susie S. Niles, Salt Lake City Public Schools.*
5:35 p.m. Personality Measurement in Speech Correction. *Sara Stinchfield Hawk, Scripps College.*
5:50 p.m. Psychoanalysis and Stuttering. *Carl H. Ritzman, University of Oklahoma.*
6:05 p.m. Adjournment.

MOTION PICTURES
8:00 p.m. (Room to be announced)
Chairman: Martin F. Palmer, University of Wichita

8:05 p.m. Laryngeal Pathologies. *Paul Holinger, University of Illinois.*
9:10 p.m. Velopharyngeal Action During Speech and Deglutition. *Harlan Bloomer, University of Michigan.*
9:30 p.m. U. S. Army Film: 'To Hear Again.' *Grant Fairbanks, University of Southern California.*

Wednesday, December 31

RESEARCH AND THEORY IN SPEECH CORRECTION
9:00 a.m., Junior Ballroom
Chairman: Harlan Bloomer, University of Michigan

9:05 a.m. The Remission of Athetotic Shoulder Tremors through the Use of Non-Musical Auditory Stimuli. *Lyda M. Schmeling, University of Wichita.*
9:25 a.m. Environmental Factors in Relation to the Speech of Cerebral Palsied Children. *Robert Harrington, University of Denver.*
9:45 a.m. A Study of the Post-Operative Status of a Representative Group of Cleft Palate Cases. *Charles Strother, University of Washington.*
10:05 a.m. A Study of Anticipatory Responses in Children with Articulatory Defects. *Mary E. Hull, University of Wichita.*
10:25 a.m. The Wish for Disordered Speech. *Norman W. Freestone, Occidental College.*
10:45 a.m. Adjournment.

SHORT COURSE: DIFFERENTIAL DIAGNOSIS OF APHASIAS
10:45 a.m., Jade Room
Instructor: Robert West, University of Wisconsin

AUDITORY AND VISUAL AIDS
Joint Meeting with S.A.A. and A.E.T.A.
10:45 a.m., Junior Ballroom
Sponsor: The Joint Committee on Exchange of Educational Materials
Chairman: D. W. Morris, Ohio State University

10:45 a.m. Meeting of Officers and Councillors, A.S.C.A.

12:15 p.m. A.S.C.A. Luncheon and Business Meeting.

PROFESSIONAL TRAINING STANDARDS IN SPEECH CORRECTION
2:00 p.m., President's Room
Chairman: Lee Edward Travis, University of Southern California

Panel:

Wendell Johnson, State University of Iowa
Herbert Koepp-Baker, University of Illinois
D. W. Morris, Ohio State University
Martin F. Palmer, University of Wichita
Robert West, University of Wisconsin

PROGRAM COMMITTEE

Harlan Bloomer, University of Michigan
Robert Harrington, University of Denver
Ernest H. Henrikson, University of Minnesota
Alonzo J. Morley, Brigham Young University
S. Richard Silverman, Central Institute for the Deaf
John C. Snidecor, University of California, Santa Barbara College
Lee Edward Travis, University of Southern California
Grant Fairbanks, *Chairman,* University of Southern California

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NOTICES TO MEMBERS

Dr. Martin F. Palmer, Chairman of the A.S.C.A. Committee on Education, has requested that all individuals holding contracts with the Veterans Administration report such contracts to the Committee as soon as possible. This information is needed in order that the best possible recommendations may be made in answer to requests for such information from V. A. District Offices.

Dr. Palmer has also announced that the Committee on Education has information regarding a number of positions which are available at the present time for individuals in the field of speech correction. Members of the Association who are interested in such positions are requested to write to the Committee. Such correspondence will, of course, be kept confidential.

JOURNAL OF SPEECH DISORDERS, 1947, **12**, 357-362

Group Pure Tone Hearing Testing In the Public Schools

Hayes A. Newby*

IN A RECENT issue of the *Journal of Speech Disorders*, Reger and Newby (3) described a group pure tone hearing test and reported measures of the test's reliability and validity with college age subjects.

Briefly, the test equipment consisted of forty earphones connected to the output of a pure tone audiometer, the oscillator circuit of which was suppressed or released by a motor-driven, mechanically-operated tone interrupter. A selector switch on the interrupter permitted the operator to produce one, two, three, or four spurts of a tone of any frequency generated by the audiometer and at any intensity level desired. An attention light was illuminated by the interruption device for a constant period during the time of each tonal presentation. Subjects responded to the test by writing on a specially prepared test paper the number of times the tone was heard during each presentation. With this equipment the hearing acuity of forty subjects was tested simultaneously at the frequencies of 256, 1024, 2048, and 4096 cycles per second over a range of intensity levels from 40 to 5 decibels (db) above the 'normal' threshold. This test was conceived and designed by Dr. Scott N. Reger of the Department of Otolaryngology, State University of Iowa.

Since the article referred to above was written, considerable testing has been performed with the group equipment in the public schools. In all, some 1200 subjects from the twelfth through the second grades have been 'screened' with the group test. Experimental testing was conducted with samples of the population from the eighth through the second grades. The experimentation was designed to answer the questions: How reliable and valid is the test at the grade school level? How efficiently does it operate as a screening device?

To study the reliability of the test at the grade school level two forms of the group test were administered to 469 subjects from the eighth through the second grades, and distributions of the differences in measurement of hearing loss by the two tests were compiled. Validity was studied by comparing the hearing losses of 108 subjects as measured by the group test with the losses of the same subjects as measured by individual pure tone tests. The group testing was performed in ordinary classrooms under routine testing conditions. All individual audiograms used in the study were obtained by the experimenter with a pure tone audiometer in relatively quiet but not soundproof rooms.

The experimentation indicated that the group test was too difficult for subjects at the second grade level with the result that the test oper-

*This article constitutes the substantial part of a Doctoral dissertation submitted in partial fulfillment of the requirements for the Ph.D. degree in the Department of Speech, State University of Iowa, June, 1947. A supplementary report of this investigation is to be found in: 'A group pure tone hearing test' by Scott N. Reger and Hayes A. Newby, *Journal of Speech Disorders*, 1947, **12**, 61-66. The dissertation was written under the direction of Professor Scott N. Reger. Professor Don Lewis, Department of Phychology, suggested basic statistical procedures, and Professors Charles R. Strother and James Curtis served as technical consultants.

The writer acknowledges with appreciation the administrative arrangements provided by Dr. Dean M. Lierle, Head, Department of Oral Surgery and Otolaryngology, Professor E. C. Mabie, Head, Department of Speech and Dramatic Arts, and Superintendent Iver A. Opstad, Iowa City Public Schools.

Dr. Newby is Assistant Professor, Department of Speech and Drama, Stanford University.

TABLE 1. Composite of number and percentage of ears from eighth through third grades showing differences of various magnitudes from group test to group retest. N = 840.

		Differences in 5 db steps							
		0	5	10	15	20	25	30	35
256	N	533	216	55	18	6	11	1	0
	%	63.5	25.7	6.5	2.1	0.7	1.3	0.1	0
1024	N	718	74	32	13	0	2	0	1
	%	85.5	8.8	3.8	1.5	0	0.2	0	0.1
2048	N	677	95	49	9	2	6	1	1
	%	80.6	11.3	5.8	1.1	0.2	0.7	0.1	0.1
4096	N	702	89	29	4	4	5	1	6
	%	83.6	10.6	3.5	0.5	0.5	0.6	0.1	0.7

	256	1024	2048	4098
% ears showing differences of 15 db and less	98	100	99	98
% ears showing differences of 10 db and less	96	98	98	98
% ears showing differences of 5 db and less	89	94	92	94

ated inefficiently by screening out too many subjects who actually had no significant hearing losses.[1] This article, therefore, will be concerned only with the data obtained from testing subjects from the eighth through the third grades.

THE RELIABILITY AND VALIDITY OF THE TEST WITH GRADE SCHOOL SUBJECTS

Table 1 is a composite distribution from the eighth through the third grades of number and percentage of ears showing differences of various magnitudes from one administration of the group test to a second administration of the test. In all instances the interval between the two tests was less than a week. The distribution of Table 1 is markedly skewed toward the zero difference end. Because the group test was designed to function primarily as a screening test which could be administered in the least possible time, it was not desired to differentiate among individuals whose hearing could be considered adequate. The group test does not attempt to obtain a determination of the threshold of such normal hearing subjects. Therefore, stimuli are not presented at sensation levels less than 5 db, and all individuals who are able to hear the tone at that level receive the same score irrespective of what the actual distribution of their thresholds may be. Moreover, a sample of school children who are unselected with respect to auditory acuity will be composed largely of such adequate hearing individuals. As a consequence of these two facts the distribution of differences between the hearing loss scores on two tests is certain to be markedly skewed toward the zero end.

From Table 1 it can be seen that at all frequencies tested, 89 per cent of the total ears showed differences between group test and group re-

[1] Evidence for this conclusion is presented by Newby (2) in an unpublished Doctoral dissertation.

test of 5 db or less, while 96 per cent of the ears showed discrepancies between test and retest of 10 db or less. From Table 1 the conclusion may be drawn that the group pure tone test scores are repeatable for a high percentage of ears with discrepancies of no more than 5 to 10 db from test to retest.

The validity of the group pure tone test was considered in terms of differences in the hearing losses measured by the group test and by individual pure tone tests. The distribution of these differences for 188 ears from the eighth through the third grades is given in Table 2. A comparison of Table 2 with Table 1 shows that the discrepancy in scores from group test to individual tests is somewhat greater than from group test to group retest. In general this increase is of the order of 5 db. Almost the same percentage of ears show discrepancies of 5 db and less from group test to group retest as the percentage which show discrepancies of 10 db and less from group test to individual test. In Table 2 it is seen that at all frequencies 80 per cent of the total ears show differences from group test to individual test of 5 db and less, while 89 per cent of the ears show differences from group test to individual test of 10 db and less, and 94 per cent show differences of 15 db and less.

The Efficiency of the Group Pure Tone Test as a Screening Device

The purpose of a group hearing test is to single out quickly those individuals whose hearing is significantly different from that of the mass of the population studied. The efficiency of a group test, then, can be judged by how well the test succeeds in separating those subjects with significant hearing losses from those who possess essentially normal hearing. A secondary consideration in evaluating the efficiency of a group test is to

Table 2. Composite of number and percentage of ears from eighth through third grades showing differences of various magnitudes from group test to individual tests. N = 188.

		Differences in 5 db steps							
		0	5	10	15	20	25	30	35
256	N	105	45	18	11	5	3	0	1
	%	55.8	23.9	9.6	5.9	2.7	1.6	0	0.5
1024	N	127	37	14	6	1	1	0	2
	%	67.5	19.7	7.4	3.2	0.5	0.5	0	1.1
2048	N	115	47	13	6	4	1	0	2
	%	61.2	25.0	6.9	3.2	2.1	0.5	0	1.1
4096	N	124	31	12	10	3	3	1	4
	%	65.9	16.5	6.4	5.3	1.6	1.6	0.5	2.1

	256	1024	2048	4096
% ears showing differences of 15 db and less	95	98	96	94
% ears showing differences of 10 db and less	89	95	93	89
% ears showing differences of 5 db and less	80	87	86	82

inquire as to how many subjects with 'normal' hearing are misclassified by the group test as having significant losses.

The efficiency of a group test depends to a great extent upon the criterion which is used to define a 'significant' hearing loss. If the criterion is too high, comparatively few subjects will be referred for individual tests, but the percentage of subjects missed who actually have impaired hearing will be high. On the other hand, if the criterion is too low, the percentage of subjects with actual losses who are missed by the test will be comparatively small, but the number of subjects with normal hearing who are referred for individual tests will be high.

The criterion of a 'significant' hearing loss employed with the individual tests used in this study was a loss of 20 db at two or more frequencies or a loss of 30 db at one frequency for either ear. Any subject who, on an individual audiometric test, proved to have such a loss or a more serious one was referred for a medical examination. The question was whether the same criterion of significance used for the individual tests would be suitable for use with the group test or whether a different criterion would result in more efficient operation of the group test as a screening device. To answer this question Table 3 was prepared.

In Table 3 the efficiency of the group test at two criteria of significant hearing loss is studied. In the first instance the same criterion used for defining a significant loss on an individual test was employed. In the second instance the criterion of a 20 db or greater loss at any frequency was used. Employing the first criterion (20 db loss at two frequencies or a 30 db loss at one frequency) results in the group test's missing 10 cases or 45.4 per cent of the 22 ears which, according to the individual

TABLE 3. The efficiency of the group test at two criteria of significant hearing loss: Composite of eighth through third grades. N = 188 ears.

			INDIVIDUAL TEST	
			Significant loss (20 db at 2 frequencies or 30 db at 1 frequency)	No significant loss
GROUP TEST	Significant loss (20 db at 2 frequencies or 30 db at 1 frequency)	N	12	21
		%	6.4	11.2
	No significant loss	N	10	145
		%	5.3	77.2
	Significant loss (20 db at 1 frequency)	N	19	35
		%	10.1	18. 6
	No significant loss	N	3	131
		%	1.6	69.7

tests, s h o w e d significant hearing losses. At the same time the use of this criterion results in the needless individual testing of 21 cases or 12.6 per cent of a total of 166 ears shown by individual tests to have no significant losses. In other words, the use of the individual test criterion with the group test results in the group test's missing significant losses in 5.3 per cent of the total of 188 ears tested, and in the needless individual testing of 11.2 per cent of the total ears. Using this criterion, the group test correctly classifies 83.6 per cent of the ears tested as having significant losses or as not having significant losses.

When the criterion of a loss of 20 db at any frequency is applied to the group test, all but 3 cases or 13.6 per cent of the 22 ears which are shown by individual tests to have significant losses are discovered. On the other hand, the application of this lower criterion of significance results in 35 cases or 21.1 per cent of the 166 ears which have no significant losses being needlessly retested. The test now correctly classifies 79.8 per cent of the total ears and fails to classify correctly 20.2 per cent. Of the 20.2 per cent incorrectly classified, however, only 1.6 per cent are ears with actual hearing losses which are undiscovered by the group test. The reduction of the group test's criterion of significance from 20 db at two frequencies or 30 db at one frequency to the criterion of 20 db at one frequency results in an additional 7.4 per cent ears being needlessly retested, but it also results in the discovery of an additional 3.7 per cent ears which actually have significant losses. In other words, for every two ears needlessly retested one more impaired ear is discovered. This fact would appear to be the most important evidence in favor of using the lower criterion of significance with the group test. It is considered worthwhile to sacrifice efficiency in the direction of increasing the number of ears needlessly retested in order to increase efficiency in discovering ears with actual impairment. Reduction of the criterion of significance below the level of 20 db at one frequency would result in the operation of the law of diminishing returns, however, and the loss in efficiency due to the increasing number of ears needlessly retested would not be compensated for by the additional number of impaired ears discovered. It is believed, therefore, that a loss of 20 db at one frequency is the most satisfactory criterion of a 'significant' hearing loss to employ with the group pure tone test.

Present methods of group hearing testing employing the group phonograph speech audiometer leave much to be desired in the way of efficiency. In an extensive survey of school children in the city of Washington, D. C., Ciocco and Palmer (**1**) compared audiograms from individual pure tone tests of 1400 subjects with the results of those subjects' test papers from one administration of the Western Electric 4-A group phonograph speech audiometer test. Limiting the observations Ciocco and Palmer made to the four frequencies employed in the present study—256, 1024, 2048, and 4096 cycles per second—these investigators concluded that the group phonograph speech audiometer failed to discover from 8 to 27 per cent of the ears with definite hearing impairment at one of these frequencies (35 db or higher) and from 10 to 33 per cent of the ears with a moderate degree of hearing impairment at one of these frequencies (20 to 30 db). The criterion used for judging a 'significant' hearing loss on the group phonograph speech audiometer was 9 S. U. (Sensation Units). In addition to missing from 8 to 33 per cent of those subjects with impaired hearing, the Western Electric 4-A group phonograph speech audiometer failed from 10 to 55 per cent of those subjects who, on subsequent individual pure

tone tests, proved to have hearing losses within the accepted normal range (15 to 20 db or less).

When the evidence of Table 3 is compared with the results of the study of the efficiency of the Western Electric 4-A group phonograph speech audiometer reported by Ciocco and Palmer (**1**), the conclusion seems warranted that the group pure tone test is a more efficient screening device for public school populations. It is believed that in comparison with group phonograph speech audiometers the group pure tone test will prove to be even more efficient when the test is extended to include the frequency of 8192 cycles per second. As explained by Reger and Newby (**3**) the upper limit of 4096 cycles per second in the present study was determined by the inefficiency of the phones at higher frequencies.

Summary and Conclusions

A group pure tone hearing test described by Reger and Newby (**3**) in a previous article in the *Journal of Speech Disorders* was administered to 1200 subjects from the twelfth through the second grades. Experimental testing was conducted with samples of the population from the eighth through the second grades to study the reliability and validity of the group pure tone test and its efficiency as a screening device. Since evidence reported by Newby (**2**) indicated that the group test was not adapted to subjects as young as second graders, this article deals only with the experimental data obtained from testing at the eighth through the third grade levels. The results of this experimentation are summarized below:

1. For the entire group of 840 ears in the reliability studies of the eighth through the third grades almost 90 per cent of the ears showed differences from group test to group retest at the frequencies tested of 5 db or less.

2. For the entire group of 188 ears in the validity studies of the eighth through the third grades almost 90 per cent of the ears showed differences from group test to individual test at the frequencies tested of 10 db or less.

3. Almost the same percentage of ears showed differences of 5 db or less from group test to group retest as the percentage which showed differences of 10 db or less from group test to individual test.

4. The group pure tone test operates most efficiently as a screening device when a significant hearing loss on the group test is defined as a loss of 20 db or more for any frequency for either ear.

5. For the entire group of 188 ears of subjects from the eighth through the third grades, the significance criterion of 20 db at any frequency results in the correct classification of almost 80 per cent of the ears, the needless retesting of 18.6 per cent of the ears, and the failure to discover 1.6 per cent of the total ears which actually have significant losses.

6. On the basis of this study the group pure tone test appears to be superior to the group phonograph speech audiometer as an efficient screening device.

References

1. Ciocco, Antonio and Palmer, Carroll E. The hearing of school children: A statistical study of audiometric and clinical records. *Monogr. Soc. Child Developm., Nat'l Res. Coun. Publ., No. 29*, 1941, VI: 3.
2. Newby, Hayes A. A group pure tone hearing test for use in the public schools. Doctoral dissertation, State Univ. Iowa, 1947.
3. Reger, Scott N. and Newby, Hayes A. A group pure tone hearing test. *J. Speech Disorders*, 1947, **12**, 61-66.

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Rehabilitation of the Aurally Handicapped Through the Study of Speech Reading In Life Situations

Boris V. Morkovin*

THE PURPOSE of speech reading training is to restore the ability of an aurally handicapped person to understand speech. The method is to reenforce, or to compensate for, his weakened or distorted *auditory* stimuli by teaching him to attach meaning to *visual* speech stimuli in the light of the whole speech situation.

This paper is limited in its scope to the analysis of the problems of persons who have had auditory speech patterns before partially or completely losing their hearing.

Readiness

The prerequisites of mutual understanding of speech by speaker and listener are (1) the same language and idiom, and (2) a common cultural pattern as a frame of reference for interpreting the meaning of words and expressions in each situation.

Since an unrelieved and protracted loss of hearing modifies and curtails social contacts, especially because of change of social status and of job, perceptual rehabilitation in our fast-changing world must stress social experience and rapport along with sensory re-education and the acquisition of linguistic skill and fluency.

So-Called 'Lipreading' and 'Situational' Approach to Speech Reading

In accordance with the above-mentioned purpose and nature of speech reading, one can readily recognize the inadequacy of the commonly accepted term 'lip reading.' Lip reading is a misnomer, because lip movements cannot be conclusive cues for speech. According to Muyskens (8), lip movements provide only 14 to 17 per cent of visually distinguishable sounds of speech. The eye can never follow the details of the sounds; even the ear, though much faster, does not always follow successive sounds. Marichelle (4), head of the School of the Deaf in Paris, used the early motion pictures to show how different are the visual cues for the same word spoken with different emphasis.

Speech reading is far more than merely reading the speaker's lips. It is reading speech and the implications of the speaker's words and of the situation in which both speaker and listener participate. The speech reader must catch the whole speech process; speech reading, as a substitute for hearing, is a form of speech perception. Speech and speech reading present the communicative process in which the speech reader receives the message conveying the thought or intentions of the speaker in order to be able to respond more or less adequately. Training in speech reading develops sensitivity for all sensory speech cues, including lip movements, and ability to interpret these cues in the light of the situation. However, we should not concentrate the attention of students on watching lip movements as a visual alphabet.

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If we do not want to 'miss the forest for the trees,' the stress in training for speech reading should be put, not on isolated cues of lip movements, but on the complete stimulus pattern which is a total situation. In the light of a life situation, lip movements in conjunction with other speech stimuli may help reveal the intention of the speaker. Thus, in the training of speech reading, we have to use a 'situational' approach. We must use a different method and a different course of study in training for speech reading from that which we use in teaching mechanical lip reading. Syllable drills, drills with lip movements, concentration on recognizing syllables or lip movements, and reading word by word are fruitless practices; they sterilize insight into the meaning of phrases, sentences, and the whole speaking situation; they dissipate the energy of the speech reader and develop faulty habits, which block speedy understanding of speech instead of promoting it. Many of the so-called bad lip readers have become analytical or slow lip readers because of poor habits of analytical attention and because of their 'hanging on the lips.' Meaningless drills upon syllables or disconnected phrases having no relation to life situations may produce an 'irradiation pattern,' or unnecessary plateau in the learning process, by diverting or preventing the development of maturation. The vitiating effect of nonsense drills kills the interest of the learner in his task. Guilford (2), of the University of Southern California, has shown that meaningless material requires the longest time to learn and is learned poorly, at best. Material with a little meaning is learned more rapidly, but the material which has a definite plan or logical form is learned the most rapidly of all.

The constant use of appropriate life and conversational situations in speech reading training serves as a natural, dynamic habitat in which oral communication can be facilitated. A hard of hearing person learns speech reading effectively from life situations. He learns naturally to derive his cues and meanings both from the verbal and from the non-verbal parts of the situations (objects, actions, expressions, posture, gestures, and the 'whole set-up'). The active participation in and meeting of these situations by a hard of hearing person contribute to the growth of his language skill and fluency and to the development of his social experience and rapport. By exposing him to carefully chosen life situations, we help him to establish a common background with the speakers by stimulating practice in sharing and in learning new 'speech currency,' i. e., timely attitudes, popular expressions, and current mores. An aurally handicapped person should be trained to observe the cues and grasp the speech in the light of the total situation. He must apply his data, derived from previous experiences, to the present situation and to the anticipation of the intentions of the speaker. The speech reader should be trained to keep in his mind a continuity of ideas and purposes of the speaker while following his conversation. It is a common experience that, even with perfect hearing, we do not understand a prolonged conversation or discussion if we have missed the 'drift' of it.

A hard of hearing person who is inclined to be analytical and has difficulty in discerning the verbal cues of the conversation should take special pains in training himself to be more observant, discriminative, and alert to the situational cues and to the intentions of the various speakers. He should make a special effort to learn their backgrounds, interests, and attitudes. It is known that people who have lived together for some time learn to follow each other's ideas from incomplete sentences or words, from posture, from a look, or from a movement of the hand or facial muscles —all cues scarcely noticeable to out-

siders. Because speech is a purposive behavior, a more or less ordered process, it can be anticipated to a certain degree or assembled from incomplete verbal cues, if the listener is familiar with the behavior pattern, problems, and topics of the speaker.

In Buell's (1) book, *Silent Speech,* a veteran who lost his hearing in World War I admirably describes his skill in observing and interpreting various cues in oral communications in different life situations. He painstakingly and systematically learned this practice without a teacher. Observing and interpreting tale-telling details seems to be the basic procedure of the most successful natural speech readers throughout the world. In the booklet, *Aural Re-education* (5), the writer has described some such cases. A severely hard of hearing child learned to read speech so successfully that she did not know of her hearing handicap until she was well advanced in childhood. Her mother 'instinctively' knew the right procedure. Instead of using gestures and pointing to objects or anticipating the child's needs, the mother continually talked to her in all situations of her everyday life, and made her observe non-verbal details as well as lip movements. The whole family accepted the rule that the child must always participate in family conversation. Her family set up a nursery school in their home, with a regular teacher and the neighborhood children in attendance. The girl made many friends at each school she attended and later in her successful career of work with the handicapped. With the help of expert teachers, she developed good speech and voice in spite of 67 decibels loss in the speech range.

Life problems and the necessity of solving them are the best incentive for learning. So Mrs. M., who did not have the advantage of using hearing aids, ingeniously learned to reenforce her speech reading in a difficult situation. In order to live up to the expectations of her sociable husband, she had to entertain his friends at their home. In spite of her severe loss of hearing, she succeeded in this, no matter how difficult it was for her to follow the conversation of the group. Meeting each of his friends separately, she learned their interests, pet subjects, attitudes, and expressions. When she had open house, no one was uncomfortable about her deafness, for she knew and noticed enough key words to follow the trend of conversation and to make her own contribution to the talk.

For a hard of hearing person, a knowledge of topics used in the group with whom he associates is not less important than the knowledge of language. A hard of hearing Mexican student, even with a fairly good knowledge of English and the use of a hearing aid, had a hard time understanding his professors and fellow students until he moved from his Spanish-speaking family to the students' dormitory, where he had to speak and think English the entire day. In a few months he had learned to think and to read speech in terms of subjects and ideas and not to translate word by word as he had done before. He learned to identify himself psychologically with the American students; he imitated them unconsciously in manners and speech. He learned to feel the words he heard by empathy; soon he had them on the tip of his tongue. His speech reading became 'kinesthesized'; he became a natural, spontaneous speech reader.

In order to follow conversation with accuracy and speed, a hard of hearing person must learn to use his defective sensory equipment with better cooperation and coordination.

Cooperation of Senses

According to Lashley (3), 'When hearing channels are destroyed, sensory impulses travel over other routes to their destination in the cortex.' There are no discrete sense departments; audition involves more than one

sense modality (**9**). Even normal hearing is supported visually, tactually, and kinesthetically in its speech perception. We can hear speech better from a distance if we use opera glasses. Difficult words we vocalize audibly or inaudibly to understand them better.

In the light of a speaking situation and of his past experience and relationship with the speaker, the hard of hearing person may be effectively trained in re-interpretation of spoken words with the aid of other senses to compensate for his fading hearing. He may develop a better sensitivity for fragmentary auditory stimuli by refreshing auditory memory through training of residual hearing, or auditory training, with or without hearing aids.

When hearing normally, a person learns correct speech and understanding of speech from the mouth of another by repeating words and by comparing his own speech sounds with those of the other person. Thus his hearing regulates his own speech movements. Hearing becomes associated with speech muscle movements and with their tactual, kinesthetic, and rhythmic sensations. Although this association is automatic and usually unnoticed, nevertheless it underlies both speech production and speech perception (i. e., speech and hearing, which are two sides of the same coin.) This auditory-vocal attachment creates the so-called *auditory speech pattern.*

When hearing is weakened or lost, the person compensates for its lack by observation of the speaker's word movements on lips and facial muscles. In this way he learns to tie up *visual* sensations (instead of or in addition to auditory sensations) with his own speech muscle movements and with their tactual, kinesthetic, and rhythmic sensations—of which anyone may become aware if he pays attention to them. Thus he learns to understand speech by speech reading, or, in other words, by sensory re-coordination.

The method of teaching speech reading by the use of life situations and of audio-visual-kinesthetic cooperation is commonly called the AVK Life Situation Method. The use of additional channels of sensory stimulation in teaching a foreign language is a long-accepted practice. By stressing all avenues—speaking (kinesthetic), listening (auditory), reading (visual), and writing (visual - kinesthetic)—teachers of foreign languages have achieved outstanding success.

Use of Life-Situation Motion Pictures

Silent life situation motion pictures (**7**, 140) develope in the student skill in the observation of both verbal and non-verbal clues, along with ability to interpret them in the light of the pictured situation. At the same time, the pictures can be used as a speech reading textbook; students find key words of the dialogue and learn to guess from the context of the sentences the words missed on the lips. The advantage of life situation motion pictures for speech reading training is that the film can be run and re-run in its continuity to let students read the lips of the close-ups of the film characters. If a student misses a word, the film can be reversed until the difficult place is reached. Without the film, it would be impossible for the teacher to find which words the students have not understood, and to return to these words and explain them.

Another advantage of motion pictures is that students remember lip words better if they associate them with actions, gestures, and expressions, and with the whole situation of the picture. Most of the dialogues can be understood by the students, with or without the help of the teacher, from the context of situations and of sentences. More difficult words can be separated into their parts, and single sounds can be compared and contrasted in the light of the rest of the picture, which has already been

understood. In this way, mechanical and analytical drills with nonsense syllables are avoided; yet words can be broken into parts to teach the students how to recognize words even from their fragments. All this is done without losing sight of the meaning of the whole situation, the sentence, the phrase, and the word.

Sensory training is achieved easily with the silent life situation moving pictures by letting students, after preliminary preparation, read the lips of the film characters aloud in the fashion of choric speech. Students are encouraged to imitate the movements and manners of characters so that they fall into swing with their dialogue. They feel the words kinesthetically and rhythmically while reading the lips. After such choric speech reading of the text with the characters (and the teacher), the students have no difficulty in synchronizing the dialogue of the characters in the picture. Not only do they retain this dialogue better, but they learn to fall into swing with real people and to read their lips spontaneously by empathy. 'Silent' or 'inner' speech is released in the speech reader by visual stimuli, just as it is released in normally hearing persons by auditory stimuli.

Speech Reading in Practice

William C., a veteran of World War II, lost practically all his hearing as the result of an explosion in the New Guinea trenches. By learning speech reading, he began to feel as if he heard again, but when he could not see the face of speaker, his 'hearing' failed again. He used hearing aids during the speech reading lessons. At first he heard only discordant noises, but as he became more and more skillful in speech reading, he began to hear more clearly, until the jumble of noise changed into articulate words. Yet hearing tests showed no improvement in hearing. A Negro boy, J. S., who lost all his hearing in an operation involving the auditory nerve, has the illusion of hearing while reading speech. By daily reading aloud to his wife, who corrected his voice and speech, he learned to regulate his speech muscle movements by the kinesthetic-rhythmic sensations. Reading the lips of characters in life situation motion pictures, he reenforced his ability to evoke kinesthetic-rhythmic sensations from moving lips. This process was aided by his continuous orientation in the meaning of situations and sentences from verbal and non-verbal clues. Like many others, his case showed clearly the importance of speech work with the aurally handicapped as a foundation for successful speech reading. His speech perception through non-acoustic channels was facilitated by awareness of speech movements and their association with the visual sensations of moving lips.

An American nurse in one of the hospitals in Africa during World War II taught a deafened American soldier to read speech without having had any previous idea of speech reading herself. In order to distract the gloomy mood of the boy, who suddenly found himself in a silent world and could communicate with others only by writing, the nurse suggested to him that they recite from memory the verses and songs they remembered from their school days in America. By watching her lips for impetus and following closely her rhythm and tempo, he learned to synchronize the words of this familiar material with her utterance of it. Soon she added expressions used in the everyday routine of the hospital, in the letters he received from home, in newspapers, etc. She proceeded from the familiar and expected expressions to less familiar and unexpected ones. When he missed words, he learned to supply them from the context of sentences and situations.

These examples show that by the cooperation of senses, a speech reader registers a sufficiently complete pattern of speech stimuli to enable him

to interpret the meaning of words in the context of the *total* situation.

In learning speech reading from motion pictures, the plan should be to proceed from the obvious phrases and words, which are easily suggested by the action of the film, to the more difficult and abstract words.

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SUBTRACTION PRECEDES ADDITION

Yes, there is Intelligence. That is as yet an untested hope in its application to the regulation of human relations. It is not discredited because it has not been tried on any large scale outside the realm of natural science. There, everyone will confess, it has produced marvelous results. . . But most of us know too little of the past to realize the penalty that had to be paid for this application of intelligence. In order that these discoveries should be made and ingeniously applied to the conveniences of life, *it was necessary to discard practically all the consecrated notions of the world and its workings which had been held by the best and wisest and purest of mankind down to three hundred years ago*—indeed, until much more recently. . . . It would be pleasant to assume that all we had to do was to build on well-designed foundations, firmly laid by the wisdom of the ages. But those who have studied the history of natural science would agree that Bacon, Galileo, and Descartes found no such foundation, but had to begin their construction from the ground up.

From *The Mind in the Making,*
by James Harvey Robinson,
(Harper, 1939), 24-25.

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Suggestions for Supervised Teaching in Speech Correction

Elizabeth C. MacLearie*

IN VIEW of the ever-increasing interest in speech correction in the public schools, it seems advisable to consider carefully the supervised teaching aspect of the training program.

In exploring this problem, a questionnaire was sent out to a few persons interested in the teacher-training aspects of speech correction. The answers to this questionnaire were tabulated and used as a basis for discussion at a staff meeting of the speech correction teachers in Cleveland. The conclusions reported here represent the thought of the staff and the writer's opinion at that time. These conclusions are tentative and are set down in the hope of provoking further discussion.

I

The situation under discussion is one in which the student is trained in the college speech clinic, supervised by the Department of Education, and works under a speech correctionist in the public schools. It should be noted in this connection that rapport among the persons concerned with the training program is important from the standpoint of unifying the demands made upon the student.

In Ohio, 200 clock hours of clinical experience under supervision while gaining training are required for certification in speech and hearing therapy. At least 100 clock hours must be obtained in practice teaching in public schools which have been approved by the State Board as suitable places for student teaching in speech and hearing therapy. As set up in Ohio, clinical practice should include experience in:

1. Administering diagnostic and achievement tests to children with speech and hearing handicaps.
2. Taking case histories and keeping objective records.
3. Operation of clinical equipment such as recorder, play-back, audiometer, mirrophone, etc.
4. Organization of case loads.
5. Giving speech correction and lip reading instruction.
6. Making professional contacts with physicians, nurses, principals, supervisors and others.
7. Establishing and operating a speech and hearing clinic.

Since a most important purpose of training speech and hearing therapists is to provide correctionists for the public schools, it is relevant to consider that practice teaching of speech correction in the schools gives first hand information about the organization and working conditions. The student gains familiarity with the forms and records required by the state department and by the local school administration. This knowledge of organization will be particularly helpful if the student must later initiate a program in another community. Moreover, this information might well be of use to the student who is planning to do research. Another important phase of student training in speech correction is the follow-up with parents and teachers.

In speech clinics, for the most part, children are handled individually; in the schools, opportunity is given to acquire skill in handling a group. Practice teaching in speech differs

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from practice teaching in any regular school subject in respect to the average size of the group, which is usually rather small, averaging five to eight pupils. In a small group, close scrutiny of each child is possible, and attention may be paid to individual differences. The student may be expected to know the stage of maturity which each child has attained at any one time.

During the course of the training in group teaching, the student tends at first to become emotionally involved with the children, and the group situation helps her to gain a more objective attitude: she gains an understanding of each child's vocabulary and learns to correlate newly acquired speech skills with classroom speaking situations.

The success of a speech rehabilitation program in any school is dependent upon the attitudes and cooperation of the classroom teachers. The student should attend any meetings conducted by the school speech therapist, and should observe other activities carried on by the therapist to provide carry-over of the speech skills learned by the children.

II

In order to make more specific the attainment of the above-mentioned objectives the working principles of such a program are presented in the form of questions and answers, as follows:

1. What types of equipment should comprise a basic work kit? The amount of this material which the student has already accumulated will depend upon its emphasis in the training courses. The type of equipment necessary for the practice teaching may well be left to the decision of the critic, or supervising, teacher. The student will find it necessary to make many adjustments when she is 'on her own,' but she will have more confidence if she has something quite tangible with which to begin. The following items are helpful:

Five to ten small mirrors
Ball
Bean bag
Hand puppet
Picture card sets
Table games
Toy instruments
Two toy telephones
Story books
Choral reading poems
Miniature objects
Blowing devices, such as pin-wheels, magic bubbles, whistles, nut-shells, boats, etc.
List of 'activity games'
List of poems and jingles to correlate with grade placement
Nursery rhymes

2. Should lesson plans be required? These are definitely helpful to the student in training. At first they should be checked in advance by the supervising teacher. This is to insure that the material is on the grade level of the children. The student should have access to the readers being used. The following two lesson plans were evolved by the writer. They are as brief as possible, since their object is not to burden the student but to insure adequate preparation. The student's own evaluation at the end of each lesson is to remind her to 'stay on the track.' Sometimes departures are effective,

GROUP LESSON PLAN FOR ARTICULATORY CASES

School_____ Date_____ Time_____

Type of Group _____

Ear Training Techniques:

Speech Drill Games or Exercises:

Assignments:

Pupils: Cooperation

1. _____
2. _____
3. _____
4. _____
5. _____

Evaluation of Lesson:
Student Teacher
Critic Teacher:

SPEECH CORRECTION
INDIVIDUAL LESSON PLAN

Name Date Lesson Period
From____ To____

School

Objective:

Drills and Methods:

Assignment:

Cooperation:

Evaluation of Lesson
Student Teacher
Critic Teacher

in which case the reasons for them may be set down to advantage. The emphasis must always be on the child and not on rigid procedures. Later in the term, the student may make a different type of plan to carry out a dramatization or other project. The plans make it easy for the critic teacher to keep track of the actual hours of teaching done by the student. They may also serve as a basis for discussion with the college supervisors. Some children need additional help. The individual lesson plan provides for this. The student may take the child to another room for help while the supervising teacher takes over the group.

3. How many lessons should the student observe? Probably the first week is sufficient. Since practice teaching comes at the end of the training period, the student will be fairly well versed in theory. She will also have had some teaching experience in the college speech clinic.

Where there are other speech correctionists in the same system or near by, two or three visits to the well-qualified ones should be arranged about midway in the semester. Since the work is not stereotyped, the approaches of these other correctionists will serve as a basis for discussion.

4. How many lessons should the student teach? As many as possible. In Ohio at least 100 clock hours are required.

5. How many visits should the student make to class rooms to observe the speech of defective children? Approximately six visits. These are most helpful to the beginning teacher. By means of her observations during these visits she can tie up her lesson planning with the activities going on in the class room. The activities helpful to her will be language periods, reading groups (regular and remedial), clubs, citizenship programs, etc. These visits should be arranged by the supervising teacher through the principal and with advance notice to the teachers visited.

6. How many home calls should the student make? Three home calls with the training teacher and two alone should be sufficient. The supervising teacher knows the neighborhood and will try to insure that nothing unpleasant will happen. It is advisable to notify the parents ahead of time and acquaint them with the purpose of the call.

7. How many parent interviews should the student make at schools? About five. The parent may be asked to visit the speech class and then be interviewed in another room while the critic teacher takes the next group. The writer requires each child to keep a 'speech notebook.' Responsibility is placed on the parents for follow-up at home. The interview gives the student an opportunity to check on home cooperation and to explain to the parent the class procedures which she has observed.

8. What teacher contacts in the way of follow-up should be required? Probably none alone. The student has no authority in the school and should assume none. She should be required to be at school at the same time as the other teachers. She may then go with the supervising teacher to discuss the follow-ups made by the regular teachers. The student may write out instructions for the classroom

teacher, but these should be signed by the critic teacher.

9. How many case histories should the student prepare? One. The student will have learned this technique in her training courses. One case history, well done, should be sufficient to make her familiar with the local form used. Perhaps she may be permitted to choose the child she would like to study. This study must be purposive and also of value to the supervising teacher. No 'busy work' as such should be assigned.

10. What types of tests may be given? The student may give diagnostic speech tests, laterality tests, auditory memory span tests, sound discrimination tests, and others which may have any bearing on determining the etiology of the speech disturbance. In a large city system, specialized personnel give intelligence, audiometer, and personality tests. Permission is not usually given to the speech correctionists to give these tests although they may be trained to do so. In smaller systems, the student may give some of these tests to the speech defectives only and at the discretion of the critic teacher. She should not be exploited to test other children in the building.

11. What surveys of neighboring schools should the student make? If this work falls in the province of the critic teacher, she may assist. Here again the student does not have the authority of a regularly employed teacher.

12. How many speech reading lessons should the student give? If there are hard of hearing children in the building, she might be asked to teach one or two classes a day. All hard of hearing children should have been examined previously by an otologist.

13. Should the student plan demonstration lessons for principals, teachers or supervisors? In general, no. If the student teacher is mature and such demonstrations are part of the critic teacher's routine, she may assist. Principals and supervisors may come in unannounced and observe regularly planned lessons as they do for regular teachers.

III

In conclusion, an important factor to take into consideration is that the critic teacher must organize her work differently when she is being assisted by a student teacher. She must see that the most challenging cases are scheduled in the half day that the student is with her. There should be as much variety in the types of cases and in the age range of the groups as possible. She must insure that there is opportunity to carry out as many different types of activities as possible. She must encourage the students to develop new techniques.

First impressions are very important in establishing attitudes toward the work. The supervising teacher should do all she can to make the working conditions pleasant for the student. During the first week the training teacher should introduce the student to all the teachers in the building where she is to work. She should be shown the office files and records available to all teachers. She should meet the nurse, doctor, dental hygienist and all other specialized personnel who come to the school.

As in all other phases of teacher training, the personality and attitudes of the critic teacher in speech correction are of vital importance. Dr. Martin F. Palmer, Chairman of the Committee on Education of the American Speech Correction Association, stated, in reply to the questionnaire, that the success of the training program depended upon the competence of the supervising teacher. Attainment of academic and experience qualifications similar to those required of Professional Members of the American Speech Correction Association is essential to a supervisor of teacher training in this field.

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A Program For The Speech-Inhibited Child

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Margaret Corcoran

Definition of Speech-Inhibited

THE TERM 'delayed speech' has been used too often to include all kinds of immature speech development, from articulatory infantilism to complete speechlessness. Too often methods devised to stimulate speech in children are primarily designed for the mentally deficient.

Fortunately, a great number of children with gross delays in speech development are not mentally deficient. This large group of children with normal intelligence, and with an understanding of spoken language, we shall refer to as speech-inhibited. They have inner speech and understanding of language, but have failed to learn to talk either because of damage to the central nervous system, or because of emotional-environmental retarding factors, or for both of these reasons.

Experiments with methods of therapy for speech-inhibited children have convinced the authors that inhibitions are best released in a group, in a normal nursery play situation, and that the parents of these children are best prepared to direct them within the home situation by a comprehensive parent education program.

Case Selection

Since only truly speech-inhibited children were to be included in this experiment, case selection presented many difficulties. All children selected for the study were virtually speechless and over three years of age. Thorough psychological study by a clinical psychologist well versed in the problems of atypical children screened out the mentally deficient, autistic and pre-psychotic children, while a neuro-psychiatric examination eliminated cretins, mongoloids, and deteriorated and gross brain damage cases, and also substantiated the psychologist's diagnoses of autism and pre-psychosis. Children accepted for this experiment had to qualify by completing both psychological tests and neuro-psychiatric examinations. All children were tested by the same examiners. Many of the children were unable to respond to the tests, at first, but showed sufficient response to performance and social maturity tests for the psychologist to recommend continuation of therapy. It was not unusual for these children to show several years' retardation on the Binet or other verbal tests. The speechless children selected, therefore, showed evidence of normally intelligent behavior, and passed the neuro-psychiatric examinations with the diagnosis of some form of emotional-environmental retardation or suspected aphasia. It was nesessary for parents to promise complete cooperation in carrying out suggestions even if it entailed removal of the child from the group.

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Group Speech Stimulation

Conditions

The environment provided for the children was that of a normal nursery: a large colorful room with a large variety of objects, pictures, and games which would interest or amuse the young. A slide, sandbox and jungle gym were used for gross muscular activity, while wood puzzles, educational toys, beads to string, peg boards, etc., furnished ample opportunity to develop finer muscular coordination. Materials were chosen which would create normal play situations and would stimulate speech.

The observation room used by parents adjoined the nursery so that parents were able to observe through one-way vision facilities. A one-way public address system made it possible for parents to hear the proceedings in the children's room and also made it possible for the therapist to interpret the children's behavior to the parents without being heard in the nursery.

Objectives of Play: Overcoming Fears and Feelings of Inadequacy

Four- and five-year old speech-inhibited children tend to have many infantile fears. Every child in the group cried, or had a temper tantrum, or in some way showed his fear and displeasure when his mother first left him in the play-room. Few of them would go near the rabbits when they first came. Their actions clearly showed their fear of other children and of competition.

The fears and temper tantrums usually lasted not more than fifteen minutes after the mother left. The child's outburst was ignored and his attention distracted. It is important to note that this type of fear is generally associated with the two- or three-year old child. The average age in this group was 5.2 years.

Two rabbits helped rid the children of their fear of animals. Having viewed the rabbits from a distance without alarm they were given the opportunity of seeing them at close range, of petting them or playing with them. 'Bunny' or 'Get the bunny' were familiar first phrases.

Careful direction of the child in this favorable environment in time helped rid him of his fears of people. Group play became enjoyable for all when failures were minimized and success was assured. From the moment these children entered the nursery they were expected to do for themselves. It was not extraordinary to see a child for whom the mother was doing everything at home climbing to get a puzzle from a four-foot shelf. Having found themselves physically adequate they had less need for resenting other children's ability and no longer feared them.

Development of Social Adequacy

Having felt inferior and inadequate, these children had recoiled from competition or cooperation. When they first came they seized what they wanted and held on, had temper tantrums when other children desired the same toy, or gave up without a struggle. They were encouraged to compete and to fight back. They soon learned to retaliate when a toy was taken from them and found this more successful than crying. Social aggressiveness is often a stage in attaining adjustment.

Once the feelings of inferiority were overcome, the need to hold on, to keep a toy to themselves, was gone. The children learned to share. They were ready then to cooperate and to verbalize their needs. After they had learned to play together they were ready for games which demanded the attention of the whole group. Through these play situations they learned both to lead and follow, to use both emotive and referential speech.

Speech Stimulation

Speech was expected from these children from the beginning. They were addressed and questioned as any speaking child. Speech was associated with all play, simple sounds with gross movements, words and sentences with games and objects. It was found that

speech can begin at any stage of play development.

Gesell[1] notes that very young children enjoy isolated play and that they normally begin parallel play at about two years of age. Many of the children in this experimental program were incapable of any but the most rudimentary types of play when they entered at five years of age. Virtually no speech is required for the play activities which they exhibited.

The imitative play stage usually follows quickly, and it normally involves considerable speech of the echo variety, such as naming things, using stock sentences in games, etc. Most children enjoyed this stage in which they developed confidence in their own ability to speak, and this sometimes constituted a problem in the speech-inhibited child. He often feared the next and most advanced play group participation.

Group participation play wherein the child was called upon to lead, to answer for himself and make decisions brought forth spontaneous speech. The children spoke without stimulation or encouragement, but merely because the speech was necessary to play the game or to participate in the activity—a kind of verbal play. It should be pointed out that even in the last type of play no effort was made to correct defective sounds or demand perfect sentences, but it was observed that although these children began at different stages, both in speech and in play activity, they all spoke in complete ideas when they were socially adjusted.

Parent Education Program

In dealing with cases believed to be suffering from shock, trauma, emotional-environmental retardation or aphasia it is absolutely necessary to have the cooperation of parents. This is usually made the more imperative by the fact that they have become greatly concerned by the atypical speech development of their children and genuinely worried about school placement. The parents in the experiment were defensive in attitude at first, almost as hostile as their children, but when they began to see the results of the program in terms of speech development, they became eager to carry out the prescribed handling of home behavior to the letter.

The parents' program consisted of lectures, discussions, and oral summaries of home progress, group observation of the children and periodic individual conferences with the therapist, the conferences including both mother and father whenever possible.

The lecture-discussions which initiated the parent's program consisted of a simple discussion of the causes of speech-inhibitions in their children. These were broken down into the topics of environmental causes, emotional problems and physical injuries to the brain.

The environmental problems discussed were: lack of need for speech due to overprotection or rejection, sibling speaking for the child, lack of positive speech stimulation and family pressures and perfectionisms which inhibit normal speech development.

The emotional problems discussed were the necessity for emotional harmony and affection at home, the need to stop comparisons with other children in the family and with neighbors, the normal need for emotional expression, and some suggestions for the channeling of the child's emotions into socially acceptable patterns. The necessity for parents to find other outlets for their own emotional problems was also stressed.

Brain injuries, the aphasias and dysphasias, were discussed in simple manner, showing how lesions can thwart speech development and why audio-visual and kinesthetic stimulation may be required.

The second series of parent lecture-discussion group meetings dealt with

[1] *Infant and Child in the Culture*, by Arnold Gesell and Frances L. Ilg. New York: Harper, 1943. Chapter XXI.

the uses and interpretations of psychological tests. The reasons why findings on performance and verbal-type tests are apt to be unequal were made clear. Parents were shown how the social maturational behavior of the child is a useful measurement of capacity. They were urged to consider these things in terms of findings in the cases of their own children.

Reports of progress at home which were called for each month proved very interesting. Parents often corrected each other's handling of behavior problems, and frequently a parent was made to see the folly of isolating a child or comparing him with another child by other parents, rather than by the therapist. An explanation of the importance of case history materials followed. The chief aspects of a normal developmental history was brought to the attention of the group.

Individual interviews followed while the rest of the group observed the play of the children through one-way vision glass. These individual meetings were arranged to give parents the specific interpretations made by the psychologist of the various tests administered. Explanations of the child's behavior in the nursery were made. The parents were given specific advice on handling special behavior problems. During the periods of observation parents were able to see how the individual findings and advice applied in actual handling of their child in a group. It was difficult to win gradually the parent's cooperation and confidence in a group play program, for most of them came to us defeated. They had been told their children were probably feebleminded. They had been criticized, and their egos had been defeated by the advice of relatives and neighbors. As much as they needed accurate information and guidance, they needed even more to have confidence in themselves and their ability to carry out suggestions.

Summary

This program of group stimulation and parent education for the speech-inhibited child was carried out over a period of five months. It will be continued because it has been found eminently successful. Of the 16 children selected for the group speech stimulation program, 12 have been either dismissed as having obtained normal speech for their age level or accepted for regular school classes. A complete study, with statistical comparisons with respect to etiological factors and therapeutic methods, is under way at the present time. There will be great need for an adequate follow-up of these children in order to measure their adjustment and progress in a normal school situation.

There are two outstanding needs which this program has brought to light. The first is for an adequate pamphlet for parents on the handling and understanding of the speech-inhibited child.[2] The second need is for reliable diagnostic procedures which can aid early detection of cases.

The main findings of the experiment to date have been that the speech-inhibited child does not need to return to the babbling stages of speech development but is as likely to use sentences effectively, from the start, and that a program of parent education and speech stimulation is more effective than speech correction in the usual sense. An average of 34 play periods over three and a half months produced practically normal speech in almost all of these speechless cases. All of the children began to talk. It is understood that this result is not based on a sufficiently large number of children to draw any specific or final conclusions. It is interesting to note, however, that 45 per cent of the so-called delayed speech cases referred to the clinic in a six-month period were not deaf, feeble-minded, endocrine cases, autistic or pre-psychotic, but merely speech-inhibited normal children.

[2]Such a pamphlet has been prepared at the Cleveland Hearing and Speech Center and is available through the Cleveland Junior Chamber of Commerce.

JOURNAL OF SPEECH DISORDERS, 1947, **12**, 377-380

The Method of Alexander Graham Bell and A. Melville Bell for Studying the Mechanism of Speech

James H. Platt*

ALTHOUGH Alexander Graham Bell is most noteworthy for his invention of the telephone, he and his father, Professor A. Melville Bell, made some very interesting observations concerning speech correction. Some of these observations might be wisely heeded by the present-day speech correctionist. It is sometimes helpful to investigate previously used techniques in our fields of interest as an aid in developing newer methods and opening up forgotten areas of research. The following was described by Alexander Graham Bell in a series of lectures in 1906 before the American Association to Promote the Teaching of Speech to the Deaf.

Professor A. Melville Bell observed that all speech sounds are produced as the results of constrictions of some kind. Constriction of the air stream by the vocal cords produces voice; constriction of the air stream by the posterior portion of the tongue produces vowels or glottal plosives depending upon degree; constriction produced by the anterior portion of the tongue in relation to the hard palate, the gums, or teeth results in certain consonant sounds.

The question arose, 'How are you going to describe a constriction?'[1] It was observed that the principal organs concerned with speech group themselves into two classes, namely, active and passive. Generally, the lower organs fall in the active group and the upper ones fall in the passive group. For instance: 'In forming the sound of (t), the point of the tongue is the active agent involved, and the upper gum is the passive.'[2] It must also be understood that in this case the two organs under discussion approximate together so as to completely close the intervening passageway. The three elements of speech mentioned, then, are (1) the active organ, (2) the passive organ, and (3) the passageway between these two organs and its condition. *Constriction,* in our use of the word, then, relates to the position of vocal organs in relation to each other. Concerning this, Alexander Graham Bell said:

> When two or more positions of the vocal organs are simultaneously assumed, the effect upon the ear is that of a single sound. In such a case the passageway is constricted at more than one point at the same time. For example: Take the vowel *oo,* in such a word as *too.* In forming this sound three distinct positions (P, P′, P″) are simultaneously assumed.[3] (See Figure 1.)

The positions referred to by Bell were as follows: (P)—a labial position of the two organs, the lower and upper lips, and the passageway, a small central opening; (P′)—a lingual position with the approximation of the posterior part of the tongue with the

[1] Bell, Alexander Graham. *The Mechanism of Speech* (Second edition). Funk and Wagnalls Co., New York, 1907; p. 36.

[2] *Ibid.*

[3] *Ibid.*

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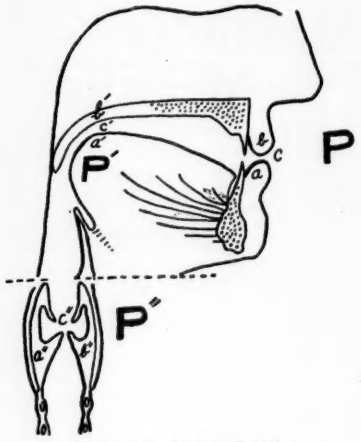

FIGURE 1. (After Bell.)

soft palate and the passageway between them consisting of a small central opening; (P″)—a laryngeal position consisting of the approximation of the two vocal cords and a slit-like aperture between them during phonation.

It should be noted that the order of the above described positions follows the pattern of (1) active organ, (2) passive organ, and (3) passageway. Bell assigned algebraic symbols to these as follows:[4]

P—A Labial Position
  The two organs
    (a) The under lip
    (b) The upper lip
  Passageway between
    (c) A small central aperture
P′—A Lingual Position
  The two organs
    (a′) Back of the tongue
    (b′) The soft palate
  Passageway between
    (c′) A small central aperture
P″—A Laryngeal Position
  The two organs
    (a″) (b″) The two vocal cords.
  Passageway between
    (c″) A slit-like aperture

It was understood that the glottis alternately opens and closes during phonation. Alexander Graham Bell explained the system as follows:

> When we come to study the method of symbolizing positions of the vocal organs devised by my father, Prof. A. Melville Bell, and called by him "Visible Speech", we shall find great advantage from considering the symbols as algebraical terms. Positions, (like P, P′, and P″), which are simultaneously assumed, may be considered as added together (P+P′+P″); but the three elements (a, b, c) which compose each position, must be taken as multiplied into one another (a×b×c). Thus: Position for *oo*=P+P′+P″=abc+a′b′c′+a″b″c″. Position symbols placed in juxtaposition without any connective sign between them must be taken as successively, not simultaneously, assumed. Thus PP′P″ means: Assume first the position P alone, then P′ alone, and then P″ alone.[5]

If the positions were to be assumed successively instead of together, the resulting speech sounds would be different from the *oo* desired. For example, if we should assume the P, or labial, position, the resulting sound would be similar to that produced by blowing. If the P′, or lingual, position were assumed, the resulting sound would be similar to that of the final German *ch*, etc. Other sounds are the result of the combining of only two of the positions such as (P′+P″), etc. Bell showed this in tabular form as follows:[6]

Positions Assumed	*Resulting Sounds*
P	Blowing to cool
P′	German *ch* in *'nach.'*
P″	The *er* as in *'her.'*
P+P′	(ʌ) as in *'what.'*
P+P″	German *w* in 'wie.'
P′+P″	Gaelic *aohg* in *'laogh.'*
P+P′+P″	The vowel sound *oo* as in *'too.'*

The vowel *oo*, or [u], then, is the result of a combination of positions. Mr. Bell also pointed out that the true element of speech is a 'constriction or position of the vocal organs rather than sound.'[7] He came to this conclusion since combinations of various positions of the speech organs produce different sounds.

Mr. Bell found that manipulation of the speech organs succeeded better

[4] *Ibid.*

[5] *Ibid.* pp. 37-38.
[6] *Ibid.*, p. 38.
[7] *Ibid.*, pp. 38-39.

with deaf persons than with those who could hear. It seemed probable that this was due to the hearing person's trying to retain the sound while the deaf person tried to retain the position.

The equation previously explained has an obvious weakness. In picturing speech positions, algebraic symbols do not adequately represent the various speech organs. For this reason, Bell and his father devised a set of symbols representing the respective speech organs. A tube-like symbol (⊃) represented a very small aperture for breath escape. If this tube were blocked at one end it assumed the symbol (⊐). (See Figure 2 for principal symbols.)

Bell developed the symbols, insofar as possible, to represent the outlines of the respective active organs. Each symbol was given a cognate to represent the passive organ nearest to the represented active organ as can be seen in the drawing. The cognate symbols were of the same shape but smaller. Since, for example, the lower lip is usually applied to the upper lip in sounding plosives, the lower lip symbol ( )) and the symbol for the upper lip had the same shape but the former was larger than the latter.

Returning to the three general points of constriction (labial position, lingual position, laryngeal position) previously mentioned, Bell was able to illustrate the method of combining the symbols.[8] (See Figure 1 for comparison with the following illustration.)

Closure of the naso-pharynx was never indicated since all but three of the sounds in the English language are produced with this closure. Therefore, only the positions of the soft palate in the opened condition for the sounds [m], [n] and [ŋ] were ever indicated. The symbol for the depressed soft palate and resulting central aperture was as follows: soft palate (ʃ) + aperture (⊃) + posterior wall of pharynx (ˈ) = ʃˈ. In forming the [m] sound, then, we have the vocal cords (|) + the depressed soft palate (ʃˈ) + articulation of the lips (ᵇˈ) = ʃ͡ᵇˈ.

The sound [n] is illustrated as ᵗˈ + ʃˈ + | = ᵗ͡ˈ. The [ŋ] sound, therefore, would be combined as follows: ᵍˈ + ʃˈ + | = ʃ͡ᵍˈ.

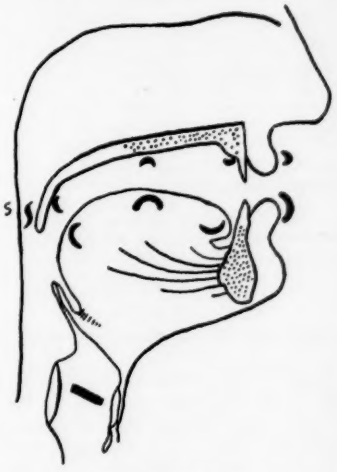

FIGURE 2. (After Bell.)*

) Under lip.
‿ Point of tongue.
‾ 'Top' or 'Front' of tongue.
(Back of tongue.
ʃ Back of soft palate.
| Slit-like aperture between vocal cords.
⊃ Upper lip.
⌣ Upper gum.
⌒ Top of hard palate.
ˈ Front part of soft palate.
ʃ Back of pharynx behind soft palate.

[8] *Ibid.*, p. 42.

*See Table 1.

TABLE 1. Interpretation of three original positions in terms of place symbols shown in Figure 2.

	Code on Figure 1	*Definition*	*Symbol Combination*
1. Labial Position	P		ɔ°
The two organs	a	Lower lip	)
	b	Upper lip	
Passageway	c	Small central opening	○
	P=abc		ɔ° = ɔ°
2. Lingual Position	P′		c꜀
The two organs	a′	Back of tongue	(
	b′	Soft palate	c
Passageway	c′	Small central opening	○
	P=a′b′c′		c꜀ = c꜀
3. Laryngeal Position	P″		ı
The two organs	a″, b″	Two vocal cords	These are implied. Symbolization not necessary.
Passageway	c″	Slit-like aperture	ı
	P″=a″b″c″	ı =	Slit-like opening between vocal cords.

Many sounds such as [u] require at least three position symbols to indicate their formations. For this reason, Bell did not use it as we use a phonetic alphabet today. Melville Bell had, however, reduced these symbols to individual characters so that associated positions could be combined into a compound symbol that could be used as we use the letters in the alphabet. This reduction of symbols was accomplished without destroying the symbolical value on which the system was based.

The Visible Speech System here described was used by Alexander Graham Bell as a tool in research. This system,[9] in its reduced form, was taught to deaf patients and used in training them to speak.

[9]The reduced system of visible speech and its use in training the deaf to speak will be discussed in a later article.

JOURNAL OF SPEECH DISORDERS, 1947, **12**, 381-386

The Bell Reduced Visible Symbol Method For Teaching Speech To the Deaf

James H. Platt*

ALEXANDER Graham Bell and Professor A. Melville Bell developed a method for studying speech based upon the outlines of the speech organs (**2**). This previously described method was used by its originators primarily in research related to speech problems of the deaf. From this method, the Bells further developed a system of symbols to be taught to the deaf for their use in a manner similar to the speech correctionist's use of the present International Phonetic Alphabet in treating cases with normal hearing. Since the system taught to deaf patients was reduced from the research method, the writer will refer to the system here discussed as the reduced visible symbol method.

This method of reduced visible symbols was educationally sound. It first appealed to the vision of the deaf student and in some cases combined vision with kinesthesis. It was simple enough for the person of average mentality to grasp.

I

In using the reduced visible speech symbols, the correctionist would first select a member of a group of deaf students and would draw a rough profile of his face on the blackboard. He would then examine the student's oral cavity and sketch in the teeth, tongue, and hard and soft palates on the profile drawing. The pharynx and vocal cords would also be indicated and the finished diagram would constitute a picture similar to that shown in Figure 1. The correctionist would acquaint the student with the various parts of the drawing as described by Bell:

> She points to the different parts of the diagram, for example, the forehead, nose, upper lip, lower lip, chin, lower part of jaw, throat, etc. The children indicate their comprehension of the diagram by touching the corresponding parts of their own faces. Attention is then directed to the interior of the mouth, and the teacher points to the picture of the upper teeth, upper gum, top of the hard palate, soft palate, etc. The children touch, or attempt to touch, the corresponding parts of their own mouths. So with the lower organs,—the under teeth, the point of the tongue, the top or "front" part of the tongue, the back of the tongue, etc. (**1**, 51).

After acquainting the class with the various parts of the diagram, the cor-

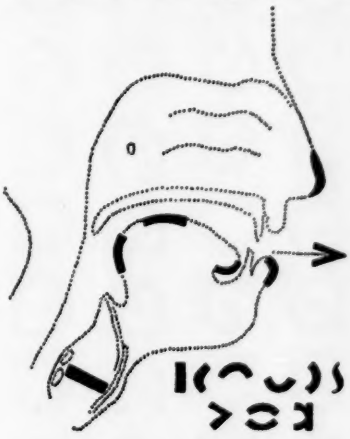

FIGURE 1. (After Bell.)

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rectionist erased all lines represented by dots in the Figure. The heavy lines only remained. The students were then to repeat the above described exercise with the use of the heavy lines. After a period of drill, the lines, or symbols, were placed in a single line (see Figure 1) and the drill process was again repeated. Two additional symbols were introduced, one representing a passage (⊂) and the other representing a blocked passage (⊐). These two symbols were first taught as positions of the fingers. No attempt was made to explain them because of their abstract nature. The students gradually learned their significance when applied to explanations of mouth positions.

The first symbol (⊂) was represented by holding the thumb and forefinger parallel to each other and close together. This indicated a central aperture. The second symbol (⊐) was shown by bringing the thumb and forefinger together in a shutting action.

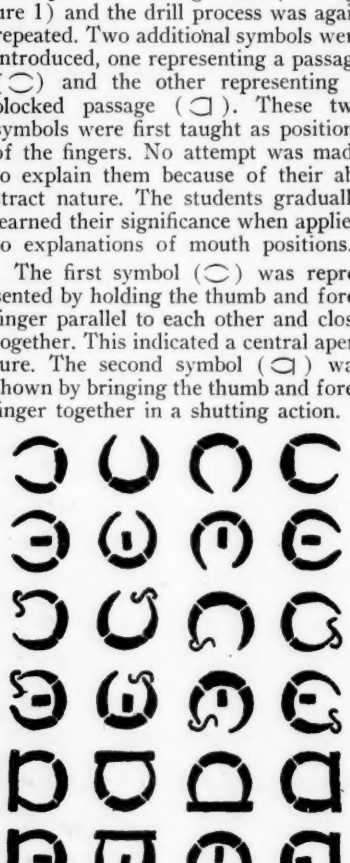


FIGURE 2. (After Bell.)

Examining the 'nose' symbol closely, it will be noticed that it is the same as the 'depressed palate' symbol used in Bell's research method (**2**).

For better understanding, we will now give names to the symbols shown at the bottom of Figure 1. We will use the names given the symbols by Bell, which are as follows: (1) voice, (2) back, (3) front, (4) point, (5) lip, (6) nose, (7) puff of air, (8) center-aperture, and (9) shut.

II

We have now reached the point where we can put the basic reduced visible speech symbols into simple combinations. The deaf student learns to analyze these symbols by breaking them down into those shown in Figure 1. In Figure 2 we find 32 groups of symbols arranged in lines. These can be broken down as follows:

First line: (1) Lip center-aperture, (2) Point center-aperture, (3) Front center-aperture, (4) Back center-aperture.

Second line: (1) Lip center-aperture, voice, (2) Point center-aperture, voice, (3) Front center-aperture, voice, ((4) Back center-aperture, voice.

Third line: (1) Lip center-aperture, nose, (2) Point center-aperture, nose, (3) Front center-aperture, nose, (4) Back center-aperture, nose.

Fourth line: (1) Lip center-aperture, voice, nose, (2) Point center-aperture, voice, nose, (3) Front center-aperture, voice, nose, (4) Back center-aperture, voice, nose.

Fifth line: (1) Lip shut, (2) Point shut, (3) Front shut, (4) Back shut.

Sixth line: (1) Lip shut, voice, (2) Point shut, voice, (3) Front shut, voice, (4) Back shut, voice.

Seventh line: (1) Lip shut, nose, (2) Point shut, nose, (3) Front shut, nose, (4) Back shut, nose.

Eighth line: (1) Lip shut, voice, nose, (2) Point shut, voice, nose, (3) Front shut, voice, nose, (4) Back shut, voice, nose. (**1**, 54-55.)

During the drill the correctionist would direct the student's attention to his own mouth. The student would follow the correctionist's example. The correctionist's procedure was as follows: For the symbol 'lip center-aper-

ture' he would place his lips together, leaving a small opening between them. One of the students would then extend his hand and the correctionist would blow on it. The resultant sound would resemble blowing to cool something. On other sounds, the students would look into the correctionist's mouth and copy, or imitate, the positions. They would place their fingers on his throat when voice was indicated by a symbol in order to experience the vibration. Similar methods were followed by the correctionist with the rest of these symbols.

III

The next basic position taught was the 'divided aperture' symbolized as **3**. The correctionist would hold his lips together in the middle and would allow air to escape from the corners of his mouth. The student would describe this by touching his lip and then holding two fingers near the thumb instead of one as was done in the 'lip center-aperture' position. This new position was then taught using the plan of symbols shown in Figure 3.

These symbols are analyzed as follows:

First line: (1) Lip divided-aperture, (2) Point divided-aperture, (3) Front divided-aperture, (4) Back divided-aperture.

Second line: (1) Lip divided-aperture, voice, (2) Point divided-aperture, voice, (3) Front divided-aperture, voice, (4) Back divided-aperture, voice.

Third line: (1) Lip center-aperture, back center-aperture, (2) Point center-aperture, front center-aperture, (3) Front center-aperture, point center-aperture, (4) Back center-aperture, lip center-aperture.

(Fourth line same as third with voice added.)

Fifth line: (1) Lip divided-aperture, back center-aperture, (2) Point divided-aperture, front center-aperture, (3) Front divided-aperture, point center-aperture, (4) Back divided-aperture, lip center-aperture. (1, 59-60).

(Sixth line same as fifth with voice added.)

It should be noted that the second symbol in the second line analyzed as 'point divided-aperture, voice,' indicates the [l] sound. The symbols of line three consist of a large 'lip center-aperture' sign with a small 'back center-aperture' sign attached. To give the symbol symmetry, another 'back center-aperture' sign is also attached. The first symbol of line three would produce the [ʍ] sound. The bottom line of symbols in Figure 3 indicate glottal positions. The first one represents a wide glottal aperture allowing air to pass freely as for the [h] sound. The second symbol represents a partially closed glottis for whispering. Such a symbol might be used in conjunction with the [θ] sound. Voice, of course, is represented by the third symbol in the seventh line, and the fourth symbol represents the complete closure of the glottis which takes place before initiating the pure vowel sound.

The throat symbols shown in the seventh line were explained to deaf students as follows:

1. Touch the throat, and then hold the two hands together palm to palm, curving

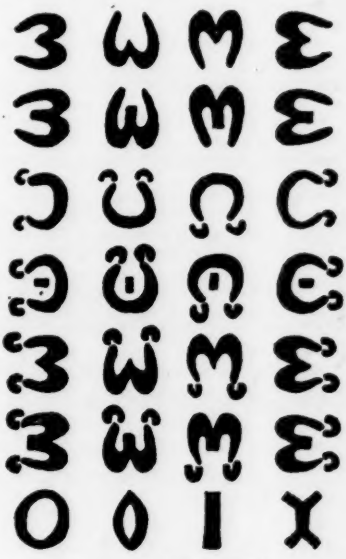


FIGURE 3. (After Bell.)

FIGURE 4. (After Bell.)

the fingers so as to cause the space between the hands to assume the shape of the first symbol. The idea to be conveyed is that the aperture in the throat is somewhat of that shape and very large.

2. Touch the throat, and then hold the hands together palm to palm, as before, but reduce the space between the hands so as to cause the aperture to assume the shape of the second symbol. The idea to be conveyed, is that the aperture in the throat is more contracted than in the former case.

3. Touch the throat, and hold the hands together palm to palm, as before, so that the aperture between the hands is reduced to a mere slit. At the same time give a quivering or trembling motion to the hands. The idea to be conveyed is that the aperture in the throat is a mere slit, and that a trembling or quivering motion occurs in the throat which the pupil may perceive for himself by placing his hand upon the teacher's throat while the teacher produces voice.

4. Touch the throat, and then press the two hands together palm to palm, with a shutting action, causing the hands to assume the appearance of the fourth symbol in the seventh line.

We may translate these gestures into words, and give names to these symbols, in the following manner: Seventh line (Figure 3): (1) Throat open, (2) Throat contracted, (3) Voice, (4) Throat shut. (1, 61, 63.)

IV

Up to this point we have considered only the symbols of the reduced visible speech method pertaining to consonants. Since many of the consonants can be 'seen' by the deaf student, this aspect of speech is usually not as difficult as that dealing with the teaching of vowel sounds. Bell developed vowel symbols using the voice character as a base.

A drawing of the sagittal section of the oral, nasal, pharyngeal and laryngeal areas was sketched on a blackboard for the benefit of the students. Generally speaking, the front and back parts of the tongue are brought into play in producing vowel sounds. Because of this, the correctionist then drew a vertical line dividing the tongue into two parts, front and back. (See Figure 4.) On this diagram, if a dot were placed on the right of the vertical line it would rest on the front half of the tongue. If a dot were placed on the left of the vertical line it would rest on the back half of the tongue.

The vowel symbols were then developed using the voice character ( ) in a vertical position and placing dots or other marks in descriptive positions on it. A mark on the right side of the voice character indicated the front part of the tongue; a mark on the left side indicated the back part and marks on both sides of the same voice character indicated a 'mixed' position of front and back. A short horizontal line drawn at right angles across the voice line indicated that the lips were employed. This symbol also indicated an aperture of round shape.

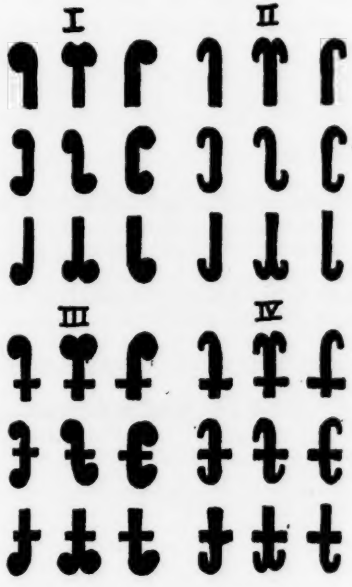
The tongue's vertical position was indicated by either placing the mark on the superior, or high, end of the voice character or on the inferior, or low, end respectively.

Analyzing the symbols at the bottom of Figure 4, we have the first basic vowel character representing the voice. The others are: (2) back of tongue high, (3) back of tongue low, (4) back and front high (high mixed), (5) back and front in mid positions (mid mixed), (6) back and front low (low mixed, (7) front low, (8) front high,

and (9) lips used in production of vowel or an aperture of round shape.

The size of the aperture was indicated by the student by degree of distance between the thumb and forefinger. He indicated the small aperture formed between the palate and the tongue when in high position by holding his thumb and forefinger closely together without touching, the same signal that he used for 'center-aperture,' previously mentioned. The medium-sized aperture was indicated with the two digits further apart, and the large aperture was indicated with a wide distance between them.

Knowing, then, the fundamental characters for vowel positions, we can analyze the symbols in Figure 5. Bell arranged these 36 symbols into four groups, namely, primary vowels, wide vowels, primary round vowels and wide round vowels, respectively. Reading downward in each group, we find, according to Bell:



(FIGURE 5. (After Bell.)

PRIMARY VOWELS

First line: (1) High back, (2) Mid back, (3) Low back.

Second line: (1) High mixed, (2) Mid mixed, 3) Low mixed.

Third line: (1) High front, (2) Mid front, (3) Low front.

WIDE VOWELS

First line: (1) High back wide, (2) Mid back wide, (3) Low back wide.

Second line: (1) High mixed wide, (2) Mid mixed wide, (3) Low mixed wide.

Third line: (1) High front wide, (2) Mid front wide, (3) Low front wide.

PRIMARY ROUND VOWELS

First line: (1) High back round, (2) Mid back round, (3) Low back round.

Second line: (1) High mixed round, (2) Mid mixed round, (3) Low mixed round.

Third line: (1) High front round, (2) Mid front round, (3) Low front round.

WIDE ROUND VOWELS

First line: (1) High back wide round, (2) Mid back wide round, (3) Low back wide round.

Second line: (1) High mixed wide round, (2) Mid mixed wide round, (3) Low mixed wide round.

Third line: (1) High front wide round, (2) Mid front wide round, (3) Low front wide round. (**1**, 65-66.)

Bell considered a vowel wide when it was necessary to widen slightly the oral passage. In comparing [i] with [ɪ], the [ɪ] sound would be described as 'high front.' The difference in the size of the aperture, it will be noticed, is slight. A hook was used in place of a dot to indicate a 'wide' aperture to differentiate it from what Bell called 'primary' vowels.

Diphthong changes were indicated by first showing the initial vowel symbol which was followed by the final vowel symbol in smaller size, as representing 'mid back round' gliding to 'high back round' as found in the word 'soul' and written phonetically as [oʊ].

V

The Bell Reduced Method of Visible Speech was successful for the following reasons:

1. It was developed from the outlines of the various speech organs, thereby permitting the deaf student to better visualize speech positions.

2. The basic symbols were simple and easy to remember.

3. It was relatively easy to combine the basic symbols in such ways as to represent adequately the various sound positions.

4. Because of the necessity for the deaf student to become familiar with the speech anatomy, even though superficially, he would likely be influenced by this method to take an objective viewpoint concerning his disorder.

References

1. Bell, Alexander Graham. *The mechanism of speech* (2nd ed.). New York: Funk & Wagnalls, 1907.
2. Platt, James H. The method of Alexander Graham Bell and A. Melville Bell for studying the mechanism of speech. *J. Speech Disorders,* 1947, **12**, 377-380.

MEN ARE TORMENTED BY . . .

If some magical transformation could be produced in men's ways of looking at themselves and their fellows, no inconsiderable part of the evils which now afflict society would vanish away or remedy themselves automatically. If the majority of influential persons held the opinions and occupied the point of view that a few rather uninfluential people now do, there would, for instance, be no likelihood of another great war; the whole problem of "labor and capital" would be transformed and attenuated; national arrogance, race animosity, political corruption, and inefficiency would all be reduced below the danger point. As an old Stoic proverb has it, men are tormented by the opinions they have of things, rather than by the things themselves.

From *The Mind in the Making,* by James Harvey Robinson, (Harper, 1939), 3.

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Visual Aids To Speech Improvement

Wilbert Pronovost*

TEACHERS of speech improvement have used such visual aids as the mirror, the candle, and the manometric flame for many years. The last decade has brought the development of electrical and electronic aids which give visual indication of a variety of vocal characteristics. This paper will describe four types of electrical visual aids; the oscilloscope, the volume indicator, the nasality indicator, and the Lite-O-Letter.

I

The cathode-ray oscilloscope gives visual indication of the wave composition of speech sounds. It has proved useful for voice problems involving volume and duration. Its application to problems of pitch is limited to major adjustments of pitch level. Its application to articulatory problems is limited to cognate confusions.

The oscilloscope may be purchased commercially from most wholesale radio distributors for approximately $100.00. Best results are obtained when a highly sensitive microphone is used. The radio distributor can usually recommend the best type, which will cost approximately $35.00.

Before using the oscilloscope with students, it is advisable to experiment with the adjustment of the control knobs. Anyone unfamiliar with the controls should request a demonstration by the radio distributor. Experimentation is important, since the adjustment of some controls is critical, and the sound wave desired can only be obtained by experimental adjustment of the controls. This experimentation is advisable for each type of voice or articulatory case.

Another important point to consider in using visual aids is that no electrical apparatus, of itself, can determine whether the visual pattern represents effective or ineffective speech. The teacher, not the apparatus, determines when the sound is produced effectively.

One application of the oscilloscope is that of using it as a volume indicator. The amplitude, or height, of the sound wave is a relative indication of the volume, or intensity, of the voice. The drill procedure requires, first, a demonstration of the desired volume by the teacher. Sustained vowels are best adapted for this purpose. As the desired volume is produced, the teacher should adjust the Vertical Amplifier Control so that the amplitude of the sound wave occupies half of the 'scope' screen. The student should then be instructed to use sufficient volume to duplicate the demonstrated amplitude. For valid demonstration, student and teacher should maintain a constant distance from the microphone.

In the actual drills, it has been found most effective to begin with sustained vowels. Then, monosyllabic words should be used and, finally, connected speech. In connected speech the desired volume should be maintained on the vowel sounds of stressed words and syllables.

These drills may be used for breathiness, huskiness, or other voice problems for which improvement may

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depend upon readjustments of volume. The desired volume is usually determined experimentally for each individual voice case.

The oscilloscope may also be used as a duration indicator in cases involving rate and voice quality disturbances requiring increased duration of tone. Each speech sound has a characteristic wave composition which can be observed when the sound is prolonged. Although absolute duration cannot be measured, the student can observe a relative increase in the duration of tone.

Research on voice shows that effective use of duration involves a relative prolongation of vowel sounds in stressed words and syllables and a tendency toward a continuous flow of sounds within phrases, except, of course, during pauses made for emphasis. The oscilloscope can aid students with a rapid, staccato rate to obtain more effective use of duration. The first step is to prolong isolated vowel sounds sufficiently to make possible recognition of distinct sound wave patterns. Then, the student should prolong the vowels of monosyllabic words so that the patterns are easily identified. These drills may be adapted to connected speech by observing the distinct patterns of the vowel sounds of stressed words, such as the italicized sounds in the sentence, 'It was *lo*ng, *lo*ng, ag*o*.'

The individual with rapid, staccato speech frequently pauses after each word to achieve a slower rate. These pauses and their elimination through continuous flow of speech sounds within phrases may be observed easily on the 'scope.' One type of drill sentence for this purpose is, 'How are you?' in which the student attempts to express meaning by prolonging the stressed sounds without interrupting phonation.

Some types of defective voice qualities respond to drills on duration. One example is the voice characterized by excessive pharyngeal tension and a 'glottal attack' on vowel sounds. In the 'glottal attack,' maximum volume is reached instantaneously. Effective speech is characterized by a 'smooth attack.' To achieve this, the student can be instructed to produce a crescendo as he prolongs a vowel sound while observing the 'scope.' He can then observe the 'scope' as he attempts

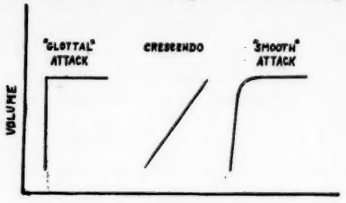

FIGURE 1

to produce 'smooth attack.' Figure 1 shows a graph of volume and duration for the 'glottal attack,' crescendo, and 'smooth attack.' The 'smooth attack' occurs when the volume increases rapidly and smoothly. After drills with sustained vowels, the student may observe that the volume increases as he prolongs vowels in the initial position of words, such as 'arm,' 'often,' 'ask.' In connected speech, the 'glottal attack' and pharyngeal tension are usually eliminated by observing a continuous flow of sounds within phrases.

The oscilloscope has limited usefulness as a pitch indicator. It has been

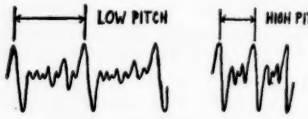

FIGURE 2

found adaptable only to voice cases requiring a change of pitch level in excess of half an octave. The pitch level is indicated by the wave length, which is directly proportional to the distance between similar points on two adjacent sound waves. Figure 2 shows the vowel

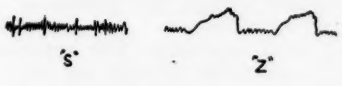

FIGURE 3

'ah' at low and high pitch levels. Effective drills to adjust pitch level with the 'scope' are limited to sustained tones and to chanting in a monotone while sustaining the vowels in stressed words. The pitch changes of normal speech occur too rapidly to be meaningfully indicated by the oscilloscope.

Few articulation difficulties can be improved with the aid of the oscilloscope. Minor speech sound distortions are not distinguishable. Even vowels adjacent to each other on the vowel chart are difficult to differentiate. One of the few applications is that concerned with cognate confusion. Figure 3 shows the sound waves for *s* and *z*. Similar differences can be observed for all cognate fricatives. Drills on these sounds are most effective when contrasting the final consonants of similar words, such as 'bus-buzz'.

Voice quality differences cannot be observed easily on the oscilloscope because of the complexity of speech sound patterns. The 'scope' has been proved adaptable only to voice quality difficulties involving readjustments of volume or duration.

II

Although the oscilloscope functions as a volume indicator, a simplified volume indicator may be constructed easily for approximately $50.00. This apparatus consists of a voltmeter, amplifier, and a microphone. Figure 4 is a schematic diagram. Any inexpensive amplifier and crystal microphone may be used. If the amplifier is not supplied with an output transformer, this unit must be purchased with the voltmeter. The voltmeter may be any low voltage alternating current meter. Some teachers may require the assistance of an electrician or radio technician in connecting the component parts of the equipment.

The voltmeter is the indicator of volume or vocal intensity. It is used with the volume drills described for use with the oscilloscope. As with the oscilloscope, the teacher should demonstrate the desired volume with sustained vowels. It has been found most convenient to adjust the Volume Control of the amplifier so that, at the desired volume, the indicating needle is in the center of the meter.

The volume indicator may be used as a duration indicator in a limited way. The length of time the needle remains in the position of maximum volume is a relative indication of duration. Thus, in working with voice problems requiring increased duration of tone the teacher may find this apparatus helpful.

Since the voltmeter is considerably less sensitive than the oscilloscope, it has not been proved useful as an aid in developing continuous flow of speech sounds within phrases. However, the relative speed with which the needle indicates maximum volume enables the student to distinguish the 'glottal attack' from the 'smooth attack.'

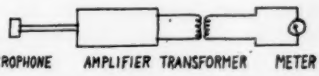

FIGURE 4 - VOLUME INDICATOR

Many voice recorders are equipped with an indicating meter which may be used as a volume indicator for voice drills. Other recorders are equipped with an electronic 'indicating-eye' to indicate volume. The 'indicating-eye' is limited to voice problems requiring a considerable readjustment of volume.

III

A nasality indicator which will indicate nasal resonance for nasal consonants or nasality on vowels may be constructed for approximately

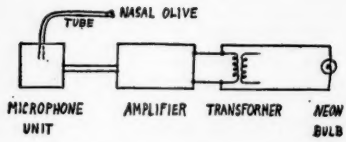

FIGURE 5 - NASALITY INDICATOR

$50.00. The apparatus described here is based on a circuit provided by Dr. Robert Curry. It consists of a microphone unit, an amplifier, and an indicating unit consisting of an output transformer and neon bulb. Figure 5 is a schematic diagram.

The microphone unit consists of an inexpensive crystal microphone enclosed in a sound-proofed box. Sound is conducted to the microphone through a rubber tube. With a nasal olive inserted in the end of the tube, only nasal sounds reach the microphone. Wooden spirometer mouthpieces may be used in place of nasal olives. They are inexpensive and easily sterilized. Unlike the nasal olive, they should not be inserted in the nostril; effective results are obtained when the sterilized mouthpiece is held at the opening of one nostril.

The amplifier may be any type of inexpensive amplifier. If funds are limited, one amplifier may be used for both a volume indicator and a nasality indicator by connecting the appropriate microphone and indicating units.

For the nasality indicator, the neon bulb and transformer may be mounted in a small box. A glowing of the neon bulb indicates the presence of nasality. The volume control of the amplifier must be adjusted for each student to give the proper indication of nasality.

In working with denasality problems, the volume control should be adjusted while sustaining the nasal consonants. One should use the least amount of amplifier volume that will give an indication of the desired amount of nasal resonance. Drills on developing nasal resonance with this indicator include the sustaining of nasal consonants and words containing nasal consonants. The apparatus is not adaptable to connected speech, unless there is a deliberate attempt to exaggerate the duration of the nasal consonants.

In working with problems of nasality, the amplifier volume should be adjusted so that the neon bulb glows for nasalized vowels but does not glow for non-nasalized vowels. The student is to be instructed to observe the neon indicator as he produces nasal and non-nasal sounds. Drills to eliminate nasality may include isolated vowels and words such as 'cook' and 'good,' which begin with velar plosives and contain no nasal consonants. In connected speech, the nasality indicator is useful only for sentences which contain no nasal sounds, such as 'The boy stood up correctly.'

IV

The Lite-O-Letter is a speech sound game for children which provides for illuminating letters associated with the initial sounds of words. Frames are provided above the letters for mounting pictures of objects having names involving these sounds. Figure 6 is a sketch of the unit.

The apparatus consists of nine frames for illuminating letters. The letters are painted on removable clear glass slides so that all letters associated with speech sounds may be used. Any small picture may be mounted on a piece of cardboard for use with the letters.

The letters are illuminated by a 6.3 volt flashlight bulb mounted behind the letter slide frames. These bulbs are wired on a parallel circuit and are controlled individually by push-button type switches. Voltage for the lights is supplied by a small 6.3 volt transformer.

This speech sound game has been found particularly helpful in providing motivation for children, especially delayed speech and articulatory cases. Each teacher can devise many games

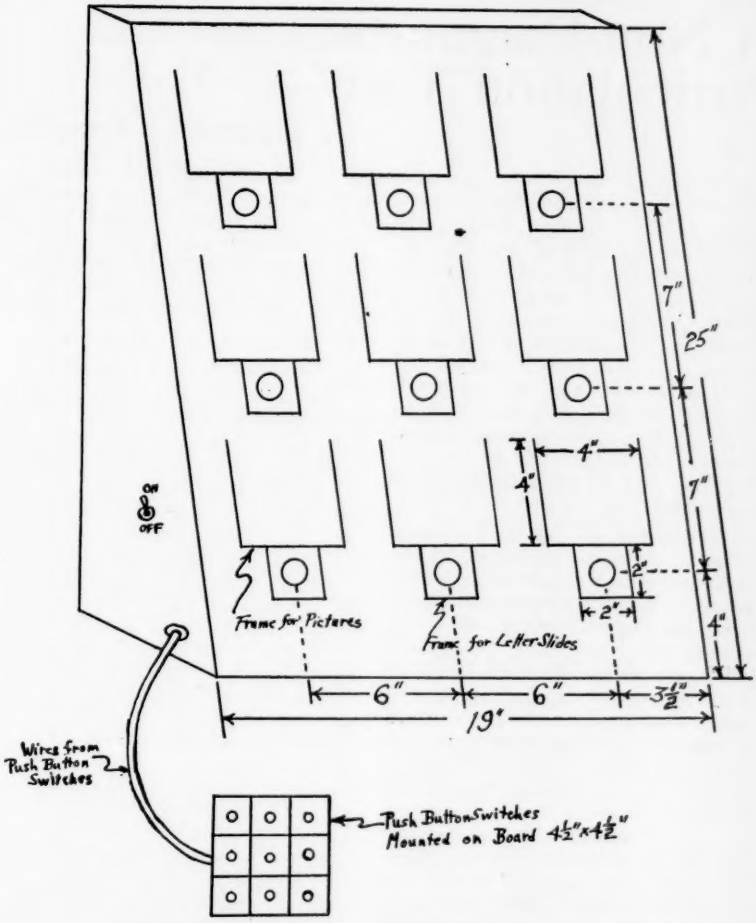

FIGURE 6 - FRONT VIEW OF LITE-O-LETTER

to stimulate the child in his drills.

Dr. Beatrice Jacoby of Queens College suggests that the apparatus might also be used with deaf children if the letter slides were painted in colors to represent unvoiced, voiced and nasal sounds. The colors may be blue for unvoiced sounds, red for voiced sounds, and brown for nasal sounds, for example.

V

This paper has attempted to describe four electrical visual aids. The suggested drills are not necessarily all of the drills which may be used with each unit. Each teacher using the apparatus will probably develop many new drills. The author is interested in learning of drills which other teachers may use.

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A Non-Diagnostic Articulation Test

Mildred C. Templin*

ARTICULATION of speech sounds is measured for two purposes: (1) to determine the correctness or incorrectness of the articulation of specific sounds, and (2) to determine the general adequacy of articulation. Whenever any program of therapy is to be planned as a result of testing, the articulation of each sound used in English must be examined. However, whenever the chief purpose of testing is to screen acceptable from unacceptable articulation only a non-diagnostic test of general articulation is necessary.

The purpose of this study was to construct a short non-diagnostic test which would be a satisfactory measure of achievement in speech sound articulation. The general level of articulation can be ascertained from a diagnostic test which covers all speech sounds if only the number of correct sounds, rather than the correctness or incorrectness of particular sounds, is considered. However, in order to obtain a satisfactory evaluation of general articulation achievement it is not necessary to examine all English sounds, but only those which are associated with significant progress in articulation development. Vowels, for example, since they are generally uttered correctly by the end of the second year (**1**) and are usually used correctly in words a short time thereafter, contribute little to the growth of articulation after this early age. A non-diagnostic test of articulation made up only of those sounds most highly related to articulation development would be economical of testing time whenever the use of a non-diagnostic measure is indicated.

*Miss Templin (Ph.D., Minnesota) is an Assistant Professor in the Institute of Child Welfare, University of Minnesota. This investigation is part of a longitudinal study of the development of articulation of speech sounds which is supported by a grant-in-aid from the Parents' Institute Research Fund of the Graduate School, University of Minnesota.

Construction of the Test

The items which make up the short non-diagnostic test have been selected from a more complete articulation test by the Lawshe nomograph technique of item analysis (**2**). As part of a longitudinal study of articulation development, 214 diagnostic tests measuring 113 sound elements have been given 100 children in the Nursery School of the Institute of Child Welfare, University of Minnesota. Three measures of a child's articulation of specific speech sounds in selected words were obtained at each test session: (1) the child's spontaneous utterance in response to a picture, (2) his utterance repeated after the examiner with the picture before him, and (3) his repeated utterance without the picture. The percentage score for each of these three measures was added to obtain a total articulation score. Two contrasting groups representing good and poor articulation were selected on the basis of total articulation score. The highest 27 per cent of the scores were taken to make up the upper group with good articulation, and the lowest 27 per cent of the scores to make up the lower group with poor articulation. Although the lower group included more younger children and the upper group included more older children, the selection was primarily on the basis of correctness of articulation rather than

on age. An analysis of each sound in the spontaneous and imitated measures was made to determine which sounds best discriminated between good and poor articulation. A discrimination value was determined for each sound. The discrimination value indicates the separation of the means of correct utterance of any item between the upper and lower group in terms of the standard deviation of the total distribution, e.g., a discrimination value (D-Value) of 2.5 for a particular sound indicates that the means of percentage of correct utterance for the two groups are separated by 2.5 standard deviations. The D-Values for a particular sound were similar regardless of whether the spontaneous or imitated measurement was considered. The 50 sound elements which were found to be most discriminating between the upper and lower groups were selected as the items to be used in the non-diagnostic test. None of the 50 sound elements have a D-Value of less than 2.0 by more than one method of testing; 21 sound elements have D-Values of 2.5 by all three methods; 13 have D-Values of 2.5 by two and 2.0 or above by the third method; and seven have D-Values between 2.0 and 2.5 by all three methods.

The 50 most discriminating sounds were measured in both words and sentences in order to compare the results of measurement of the same sounds under two conditions. Although the word test could be administered more quickly the sentence test was included since it was believed that a sentence test might be more interesting to some of the children. The word test measures the 50 sound elements in 40 words and the sentence test measures them in 19 sentences. These tests are given below. Only the italicized sound elements are tested. In the administration of the tests, a line is drawn through each italicized sound element incorrectly articulated. The score is the number of the 50 sounds which are correctly articulated.

Word Test

1. *r*eac*h*ing
2. *sk*ate
3. *br*oth*er*
4. *sh*oe
5. *splash*ing
6. *sn*ow
7. yellow
8. *ch*erry
9. *sl*ed
10. any*th*ing
11. *gr*ass
12. *cl*oth
13. *th*ere
14. *fl*ower
15. *spr*ing
16. *th*umb
17. *tr*uck
18. *v*alentine
19. *sp*oon
20. *j*ump
21. *thr*ow
22. *pr*esent
23. *shr*ink
24. *sw*ing
25. *dr*um
26. *st*ove
27. *gl*ass
28. *scr*atch
29. *fr*esh
30. *sm*ooth
31. *cr*acker
32. *z*ipper
33. *pl*easure
34. *l*arger
35. onion
36. *b*ird
37. *str*aw
38. *m*usic
39. *tw*ins
40. *qu*een

Sentence Test

1. In *spr*ing we *pl*ay outside.
2. We *thr*ow balls and ca*tch* them, too.
3. The *tw*ins gave *cr*ackers to the *b*irds.
4. Mo*th*er *scr*ubbed the *fl*oor.
5. Mar*th*a *sh*outed, "*Sl*ide! It's fun!"
6. *Sm*oke came *fr*om the *tr*ain.
7. Here's a *l*ong piece of *r*ed *str*ing.
8. *Ch*arles *j*umped in the *pr*etty *sn*ow.
9. Come *qu*ick! I *dr*opped my *sk*ates.
10. Where is my *cl*ean *sw*eater?
11. I *br*ush my tee*th* every day.
12. I *u*se a green and yellow bru*sh*.
13. The sol*d*iers are mar*ch*ing.
14. I like *shr*edded wheat.
15. The *th*in girl *spl*ashed in *th*e water.
16. The *st*ove is *v*ery smoo*th*.
17. Wil*l*iam mea*s*ured the *z*ipper on his coat.
18. *Gr*ace is wa*sh*ing the *spoons*.
19. I'm *gl*ad you like ca*rr*ots.

Procedure

The word and sentence tests were administered to three groups of children: (1) 57 children from the Institute of Child Welfare Nursery School, University of Minnesota, ranging in age from two years one month to five years nine months; (2) 20 children in kindergarten in Wauwatosa, Wisconsin, ranging in age from five years ten months to six years two months; and (3) 22 children enrolled in speech correction classes in Wauwatosa. These children ranged in age from five years

TABLE 1. Reliability coefficients on 50 items tested in words and sentences.

	University of Minnesota Group					*Wauwatosa Group*	
	5 year N=20	*4 year N=15*	*3 year N=15*	*2 year N=7*	*Total N=57*	*Kindergarten N=22*	*Speech Class N=20*
Session I Words and Sentences..	.98±.01	.99±.01	.99±.01	.99±.01	.99±.00	.96±.01	.89±.03
Session II Words and Sentences..	.99±.01	.98±.01	.97±.01	.98±.01	.99±.00	—	—
Test-Retest							
1. Words I and II..	.97±.01	.99±.01	.98±.01	.93±.03	.98±.00	—	—
2. Sentences I and II	.97±.01	.99±.01	.98±.01	.95±.02	.98±.00	—	—

to eight years. Each of these groups was tested by a different examiner.[1]

The children in the University of Minnesota group were given both the word and sentence tests twice within eight days. The Wauwatosa children were tested only once on both the word and sentence tests.

In the administration of the word test the children repeated the word after the examiner or responded spontaneously to a picture, whichever method seemed best adapted to the particular child. This was done since similar test results are obtained regardless of the method of testing (4). Pictures were used more frequently with the younger children. In the administration of the sentence test, the children repeated the sentences after the examiner.

RESULTS

The usefulness of a test is defined in terms of its reliability and validity. The reliability of the non-diagnostic test is determined by (1) the correlations of the word and sentence tests given at the same test session, (2) the test-retest correlations of the tests, and (3) a comparison of the means on the word and sentence tests.

The coefficients of reliability as computed from the raw test scores are presented in Table 1. In the University of Minnesota group all of the test-retest coefficients are above .97 for the total group and at the three, four, and five year levels. The reliability of the word and sentence tests is about equal. Although the test-retest coefficients are high, the use of the sentence is questionable with the two-year-old group, since the sentence had to be broken into short phrases to be within the memory span of the children.

The correlations between the scores on the word and sentence test taken at the same session for single ages and for the total University of Minnesota group are above .97; for the Wauwatosa kindergarten in which the age range covers only four month, the correlation is .96; and for the speech defective group it is .89. This last correlation, although somewhat lower than for the other groups, is high enough to indicate satisfactory test reliability. Since all of the children in this group are receiving speech training, more variability on repeated tests would be

[1]The children in the University of Minnesota Nursery School were tested by the author; those in the Wauwatosa Public Schools by Miss Margaret Hogan and Mrs. Pauline Hill, both speech therapists.

TABLE 2. Mean scores on word and sentence tests.

	University of Minnesota Group					*Wauwatosa Group*	
	5 year N=20	*4 year N=15*	*3 year N=15*	*2 year N=7*	*Total N=57*	*Kinder-garten N=22*	*Speech Class N=20*
Session I							
Words	44.8±3.2	42.3±5.3	34.6±12.7	18.0±21.6	38.5±3.0	48.0±1.1	48.0±1.7
Sentences	45.1±2.7	42.1±5.3	34.5±11.0	19.0±20.3	38.9±3.0	47.6±0.7	47.4±3.0
Session II							
Words	43.9±3.6	42.5±6.0	35.7±10.9	17.1±18.2	38.2±3.1		
Sentences	45.0±3.0	42.3±5.8	36.3±8.3	18.4±20.3	38.5±2.8		

expected because of the irregularity of progress in learning a new sound. All of these correlations between scores on words and sentences are high. Since these coefficients are obtained on three different groups of children and by three different examiners, the possibility of results being dependent upon a particular group or upon a particular examiner is eliminated.

The mean scores attained on the word and sentence tests for the three groups are presented in Table 2. Inspection of these means and standard deviations shows very close agreement in scores on the word and sentence tests. In no instance are the differences in mean scores between any of the measures at a single age or for a total group statistically significant.

Since none of the children in the three groups was tested with a diagnostic test of articulation, no measure of validity on these groups is available. However, in order to afford some measure of validity, the 214 non-diagnostic tests containing 113 sound elements were rescored on the 50 most discriminating items which were used in the word and sentence tests. The correlation of the scores for correct utterance on the 50 items and the 113 items is .95 for the spontaneous verbalization; .98 for the repeated verbalization with the stimulus picture still before the child; and .97 for the repeated verbalization with the picture no longer before the child. Since the same measurement of the 50 items is included in both the 50 and 113 items for each of the tests, the correlations are spuriously high. However, this factor alone would not account for the magnitude of these correlations.

Another measure of the validity of the 50 items is the comparison of the correlations of the 50 items and the 113-item diagnostic test with external criteria such as C.A. and M.A. Since the intercorrelations between the three 113-item tests are all above .95, only the correlations of the 50 items and the 113 items in the repeated test without the picture before the child are pre-

TABLE 3. Correlation of C.A. and M.A. with the 113 item test and the 50 items.

	C.A.		*M.A.*	
	113 items	*50 items*	*113 items*	*50 items*
Girls	.60±.04	.60±.04	.67±.04	.63±.04
Boys	.67±.04	.66±.04	.76±.03	.75±.03
Total Group	.64±.03	.64±.03	.70±.02	.71±.02

sented in Table 3. This measurement was selected since the administration is most similar to that followed in the non-diagnostic word and sentence tests. The agreement in the magnitude of the correlations between the scores of the 113 items and the 50 items with both C.A. and M.A. is high. The greatest difference is .04 between the correlations with M.A. for girls and the 50 and 113 items.

Summary and Conclusions

In this study the 50 sound elements found to be most discriminating between good and poor articulation by the Lawshe nomograph technique of item analysis were used in the construction of non-diagnostic word and sentence tests of articulation. The 50 items form a reliable non-diagnostic test whether measured in words or sentences. The 50 items are a valid measure of general articulation if the longer 113-item test is a valid measure. Since both the word and sentence tests measuring the 50 sounds are about equally satisfactory, either can be used. There was no difference observed in the willingness of the children to cooperate in the word or sentence tests, although for the youngest children it was necessary to break up the sentences. The word test has the advantages of taking less time to administer, being equally well adapted for all ages tested, and permitting more flexibility in the administration of the test.

In dealing with children there are many uses for a non-diagnostic test of general level of articulation. One important use of a non-diagnostic test is in speech surveys when those children whose speech is acceptable are to be separated from those whose speech is unacceptable. The tests described above can be used to select in a few minutes those children needing further study of their speech. A non-diagnostic test has a definite place in the battery of tests used in child guidance clinics where no diagnosis of speech problems is made, but where the decision as to whether a child's speech requires the attention of a trained speech pathologist must often be made.

In order, however, for this non-diagnostic test to be really useful, norms must be established. At present the performance of only a small number of children from the upper socio-economic groups is known. Since mature articulation is reached by at least seven and a half years (**3**), norms need to be established through this age level. With the cooperation of several speech therapists, normative data are being gathered.[2] When norms have been established throughout the period of development of speech sound articulation, it is hoped that some light may be thrown on the question of when remedial work with a child with defective speech should be begun. It is likely that the answer will be in terms of the degree of retardation in general articulation development at any age and not in terms of chronological age alone.

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JOURNAL OF SPEECH DISORDERS, 1947, **12**, 397-401

Infant Speech: Consonantal Sounds According To Place of Articulation

Orvis C. Irwin*

THIS ARTICLE and the accompanying article will be concerned with the infant's mastery of the consonantal sounds. Analyses of the development of consonants may be made in terms of the place and of the manner of articulation. This report is concerned with the progress of each consonantal sound and with the development of the classes of consonants according to the place of articulation. This progress will be illustrated by means of profiles and curves. Another article will deal with consonantal development according to the manner of articulation.

The analysis of the consonant data is presented in terms of percentages. That is, each consonant has a value corresponding to its proportion of the total at a given age level. The percentages are given in Table 1. Age levels have been placed in the columns of the table and consonants in the rows. The table should be read as follows: the consonant [p] for age level 1 represents .10% of the total for that age and the consonant [ʔ] represents 42.91%. For age level 15 the consonant [p] is 4.47% of the total for that age and [ʔ] represents .07%. A column indicating the percentage of occurrence of consonants in adult speech is found at the right of the table. The per cent of occurrence for each consonant sound, accordingly, for each age level of the period of infancy may be determined by this table.

In Table 2 are found the percentage values of consonants classified according to place of articulation. It includes the following: combined labial and labio-dental, lingua-dental, post-dental, velar, and glottal sounds. The sounds included in these classes may be found in a table such as the one published by Fairbanks (**1**). In addition the glottal stop [ʔ], the velar [x], and the post-dental [ç], have been included.

Profiles for consonant usage according to place of articulation are given in Figure 1. Profiles for the following age levels have been included: 1st (1-2 months), 3rd (5-6), 5th (9-10), 10th (17-18), 15th (29-30). For purposes of comparison a profile based on the Voelker data (**3**) has been included.

Thus the detailed development of consonant articulation may be followed in Table 1, and general trends may be observed by means of Table 2 and the profiles. During the first two months of life the most frequently used consonants are [k], [g], [h] and [ʔ]. Other consonantal sounds either are not present (represented by blank spaces in the table) or constitute a negligible proportion of the total per cent of occurrence.

The profiles indicate graphically the expansion in the use of consonants from the first age level to the fifteenth. An especially significant finding at the first age level is the concentration of

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TABLE 1. Consonant phoneme percentages.

Age Level	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*Adult**
p	.10	.20	.30	1.13	.67	1.63	1.07	2.10	1.27	2.73	4.17	4.32	3.57	3.63	4.47	2.41
b	.19	1.54	2.50	4.47	7.97	9.79	9.48	11.95	14.95	13.38	13.52	8.97	8.81	7.34	7.64	3.18
m	.21	.66	3.07	5.21	7.53	6.69	9.23	5.74	5.43	7.38	8.45	8.41	7.14	7.29	7.99	4.47
w	.07	1.10	1.49	.96	2.64	3.31	4.36	4.55	7.02	4.61	5.19	6.42	5.77	3.83	3.31	2.99
ʍ					.02	.08	.34	.05	.04	.15	.20	.03	.21	.11	.20	.60
f			.27	.56	.73	.37	.45	.47	.63	.81	1.37	1.18	2.19	1.73	1.79	3.48
v		.16	.16	.90	1.22	1.03	.44	.42	.29	.49	.29	.52	.68	.57	.63	2.52
θ		.40	.39	.49	1.49	.85	.67	.38	.29	.36	.11	.36		.06	.14	1.06
ð		.37	.34	.30	.17	.34	.43	.30	.36	.56	.61	.61	.68	.62	1.70	5.13
t	.17	.39	.22	1.05	1.68	4.34	3.96	4.14	4.61	5.57	7.43	8.31	10.12	11.17	11.68	11.66
d		2.64	2.06	6.46	15.73	20.58	19.42	20.04	20.56	18.45	15.07	15.31	14.25	16.20	13.98	8.28
n	.14	.35	.52	1.68	1.03	2.65	2.07	3.11	5.38	7.89	8.85	9.74	9.31	10.07	9.49	11.85
s		.05	.20	.17	1.65	3.45	2.81	3.08	3.59	3.51	6.06	7.42	7.98	8.11	6.87	7.54
z		.07		.12	5.21	.56	.69	1.23	1.00	1.14	.65	.51	.58	.23	.41	3.48
ʃ	.17	.09	.02		.33	.37	.25	.29	.41	.50	1.08	.84	1.40	.93	.82	1.64
ʒ				.12		.10		.02	.11	.04	.07	.09	.07			.67
ɾ	.21	.99	.23	.51	1.37	.96	.57	1.57	1.04	1.47	1.93	2.08	2.51	3.06	3.37	6.32
r			.15			.10	.18	.53	1.09	.99	1.54	2.67	3.96	4.12	4.64	10.51
j		.72	1.12	1.14	2.15	1.77	3.78	2.29	1.95	2.80	1.64	1.73	1.69	2.04	1.50	1.89
ç		.09		.06	.16	.06	.11	.29		.02			.06	.09	.10	
ŋ		.26	.17	.80	.03	.33	.31	.03	.14	.42	.31	.62	.84	.99	.48	1.68
k	8.80	2.78	4.90	2.05	1.82	2.12	2.36	2.76	2.73	4.04	6.04	4.36	6.74	6.16	6.98	4.15
g	2.79	11.73	7.46	5.43	4.12	4.15	4.91	5.55	5.17	4.46	4.47	2.67	3.33	3.18	4.05	1.75
x		.04	.10	.01	.14	.08	.05		.02	.09	.04		.07	.03		
h	44.22	59.88	61.93	57.87	41.29	31.77	29.75	26.69	20.75	16.29	9.84	10.93	7.53	8.14	7.65	2.66
ʔ	42.91	15.48	12.41	8.51	5.84	2.52	2.31	2.19	1.12	1.85	1.07	1.90	.44	.22	.07	

*Voelker data.

TABLE 2. Percentage of consonants by place of articulation.

Age Level	*Labial*	*Labio-Dental*	*Combined*	*Lingua-Dental*	*Post-Dental*	*Velar*	*Glottal*
1	0.6		0.6		0.7	11.6	87.1
2	3.5	0.2	3.7	0.8	5.4	14.7	75.4
3	7.3	0.4	8.1	0.7	4.5	12.6	74.3
4	11.8	1.5	13.3	0.8	11.3	8.3	66.3
5	18.8	2.0	20.8	1.6	24.3	6.1	47.1
6	21.5	1.4	22.9	1.2	34.9	6.7	34.3
7	24.5	0.9	25.4	1.1	33.9	7.6	32.0
8	24.4	0.9	25.3	0.7	36.6	8.6	28.8
9	28.7	0.9	29.6	0.7	39.7	8.1	21.9
10	28.3	1.3	29.6	0.9	42.4	9.0	18.1
11	31.5	1.7	33.2	0.7	44.3	10.8	10.9
12	28.1	1.7	29.8	1.0	48.7	7.7	12.8
13	25.5	2.9	28.4	0.7	51.9	11.0	8.0
14	22.2	2.3	24.5	0.7	56.0	10.4	8.4
15	23.6	2.4	26.0	1.8	52.9	11.5	7.7

consonant articulation in the velar and glottal categories. Over 98% of the consonants in early infancy are found here. Likewise toward the end of the first year of life (9-10 months) over half of the consonants are velars and glottals. This dominance of consonants formed by the rear parts of the

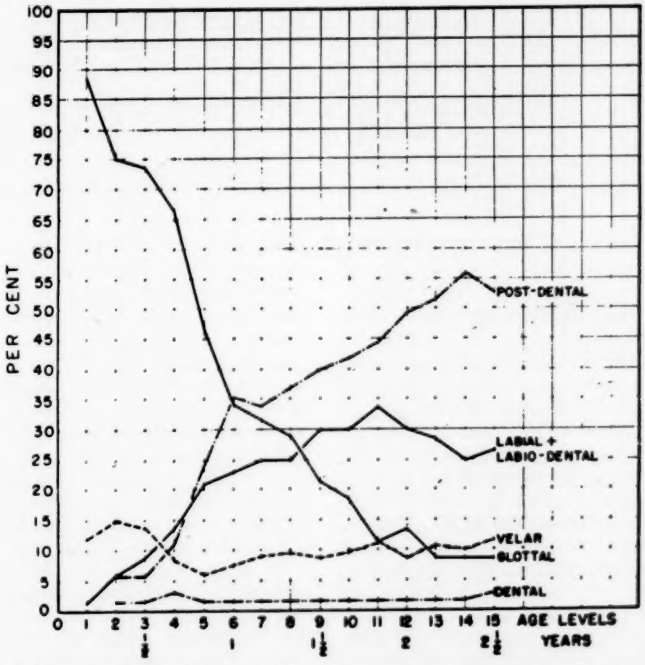

FIGURE 1. Curves showing progress of developments of consonantal sounds in each of five major categories according to place of articulation.

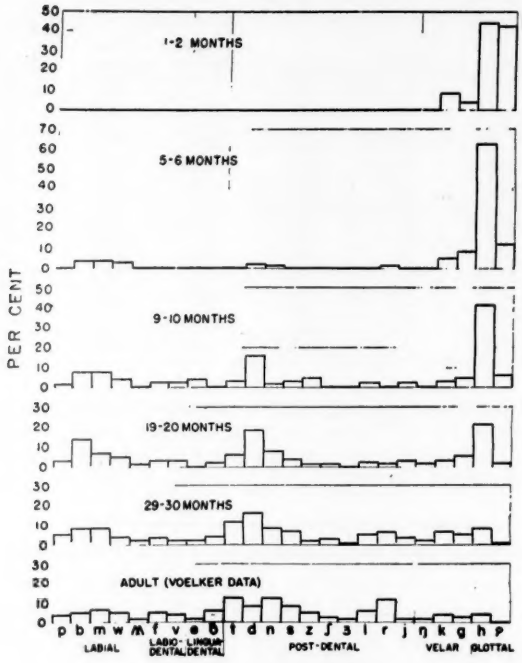

FIGURE 2. Profiles for consonant usage according to place of articulation.

mouth is in striking contrast to the early articulation of back vowels which represent a very small proportion of the total of vowels in the first months of life.

Post-dental and labial consonants are becoming prominent before the end of the first year. At the end of the period of infancy, the profile (29-30 months) approximates that for adults but is not identical with it.

In order to graph the development of consonants according to place of articulation, the percentages in Table 1 have been grouped into the following five categories: (1) labial and labio-dental, (2) lingua-dental, (3) post-dental, (4) velar, and (5) glottal. It will be noted that labials and labio-dentals have been combined. A curve for each of these groups has been plotted in Figure 2. The most striking of these curves is that for glottal consonants. The decrement in the use of these sounds is in contrast with the amounts of utterance of other classes of consonants. Labials and labio-dentals and post-dentals show increments. Dentals are not prominent, and this group, together with velars, remain fairly constant throughout the period of infancy. Attention should be called to the fact that labials, labio-dentals and lingua-dentals are practically absent during the first months of life. It has generally been thought that the labials, [m], [p], and [b], are the consonants which are first articulated. The present analysis does not substantiate this view.

SUMMARY

This study deals with the vocalization of consonant sounds during the period of infancy. The analysis is in terms of the per cent for each sound of the total consonant utterance at each of fifteen two month age levels. Consonant sounds were classified according to place of articulation into the following groups: (1) labial and labio-dentals, (2) lingua-dentals, (3) post-dentals, (4) velars, and (5) glottals. Profiles and curves are presented to illustrate the infant's progress in the mastery of these sounds. Velars and glottals constitute about 98% of the consonantal sounds during the first months of life. The remaining groups at this time are negligible. At the end of the two and a half years velars remain unchanged, glottals have been reduced from 87% to 8%, labials increased to 24%, post-dentals to 53%, and lingua-dentals remain negligible. The profile for the 15 age level (28-29 months) approximates that for adults but is not quite identical with it.

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IF TIME REMAINS

When the intellectual history of this time comes to be written, nothing, I think, will stand out more strikingly than the empty gulf in quality between the superb and richly fruitful scientific investigations that are going on, and the general thought of other educated sections of the community. I do not mean that scientific men are, as a whole, a class of supermen, dealing with and thinking about everything in a way altogether better than the common run of humanity, but in their field they think and work with an intensity, an integrity, a breadth, boldness, patience, thoroughness, and faithfulness —excepting only a few artists—which puts their work out of all comparison with any other human activity. . . . In these particular directions the human mind has achieved a new and higher quality of attitude and gesture, a veracity, a self-detachment, and self-abnegating vigor of criticism that tend to spread out and must ultimately spread out to every other human affair.—H. G. WELLS.

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Infant Speech: Consonant Sounds According To Manner Of Articulation

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THE development of consonant sounds according to place of articulation was reported in the preceeding article. The present report is concerned with an analysis of the infant's mastery of consonantal sounds classified according to the manner of articulation.

The percentage values have been reclassified according to the manner of articulation into nasal, plosive, semi-vowels, fricative and glide consonants. The individual sounds included in these classes may be found in a table such as the one published by Fairbanks (**1**). In addition to the Fairbank's list, the plosive [ʔ] and the fricatives [x] and [ç] have been used. Consonant profiles are found in Figure 1. Profiles for the following age levels are included in the graph: 1st (1-2 months), 3rd (5-6 months), 5th (9-10), 10th (19-20), 15th (29-30). It may be seen from the profiles that by far the largest proportion of sounds are included in the plosive and fricative groups. Nasals, plosives, and glides begin to come in definitely at the 5-6 months. It is not until the 9-10 month level that semi-vowels and fricatives appear. It will be noted that the distribution of consonant sounds for the last age level according to manner of articulation resembles fairly closely that for adults. Such differences as do exist are minor. They are concerned with the sounds [θ], [z], [ʒ], [ʍ] and whose articulation at the end of the period of infancy is negligible.

Table 1 of the present article shows the proportions for nasal, plosive, semi-vowel, fricative, and glide consonants. A curve for each of these groups is plotted in Figure 2.

It may be seen from the curves that at first nasal, semi-vowel, and glide consonants are rare and that with the advance of infancy some increase in their utterance occurs. The curves show that the very young infant articulates mostly plosive and fricative sounds. Toward the end of the two and one half year period plosive consonants are the most prominent, whereas fricatives decrease. An interesting aspect of these two curves is present during the first year of life. At first plosives exceed the fricatives. Then there is an increment in the fricatives contrary to the later trend of this curve. In the case of plosives there is a decrement contrary to the later trend. Moreover, these exceptional aspects occur at the same time. The decrement in the plosives during the first part of infancy may be explained by the diverse development among plosive sounds. The glottal plosive [ʔ] drops precipitously durin the first half year [see Table 1 (**3**)] whereas the plosives [p], [b], [t], [d], [k] and [g] increase, and they compensate the loss due to the dropping out of [ʔ].

The peculiarity of the fricative curve may be explained by the be-

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TABLE 1. Percentage of consonants by manner of articulation.

Age Level	Nasal Voiced	Plosive			Semi-Vowel	Fricative			Glide
		Voiced	Voiceless	Total	Voiced	Voiced	Voiceless	Total	
1	0.3	3.0	52.0	55.0	0.2	—	44.4	44.4	0.1
2	1.3	15.9	18.9	34.8	0.9	0.5	60.6	61.1	1.8
3	3.8	12.0	17.8	29.8	0.4	0.5	62.9	63.4	2.6
4	7.7	16.3	12.7	29.0	0.5	1.4	59.1	60.5	2.2
5	8.6	27.8	10.0	37.8	1.4	1.6	45.8	47.4	4.8
6	9.7	34.5	10.6	45.1	1.1	2.0	36.9	38.9	5.2
7	11.6	33.8	9.7	43.5	0.7	1.6	34.1	35.7	8.5
8	9.2	37.5	11.2	48.7	2.1	2.0	31.2	33.2	6.8
9	11.0	40.7	9.7	50.4	2.1	1.8	25.7	27.5	9.0
10	15.7	36.3	14.2	50.5	2.4	2.2	21.6	23.8	7.6
11	17.6	33.2	18.7	51.9	3.4	1.6	18.5	20.1	7.0
12	18.8	26.9	18.9	45.8	4.8	1.7	20.7	22.4	8.2
13	17.3	26.4	20.9	47.3	6.5	2.0	19.2	21.2	7.7
14	18.4	26.7	21.2	47.9	7.2	1.4	19.1	20.5	6.0
15	18.0	25.7	23.2	48.9	8.0	2.7	17.4	20.1	5.0

havior of the fricative consonant [h]. Table 1 of the previous article (3) shows an increment from the first to the second age level of 15.66% which accounts for the rise in this part of the curve. Thereafter it decreases and such increases in the other fricative consonants[f],[v], [θ], [ʒ], [s], [z], [ʃ], [ʒ]

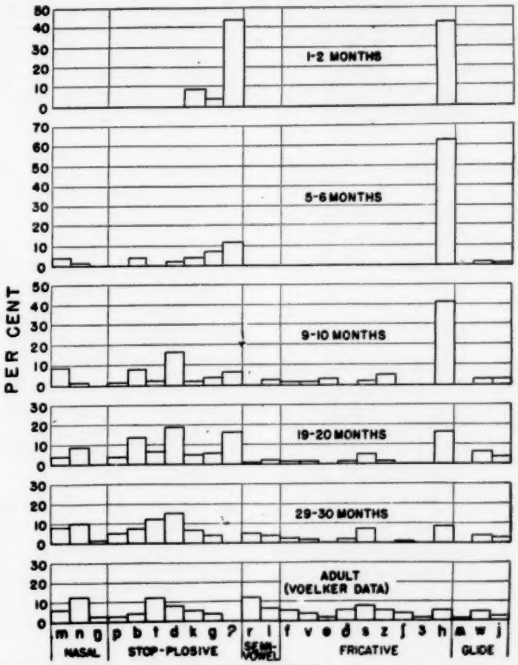

FIGURE 1. Profiles for consonant usage according to manner of articulation.

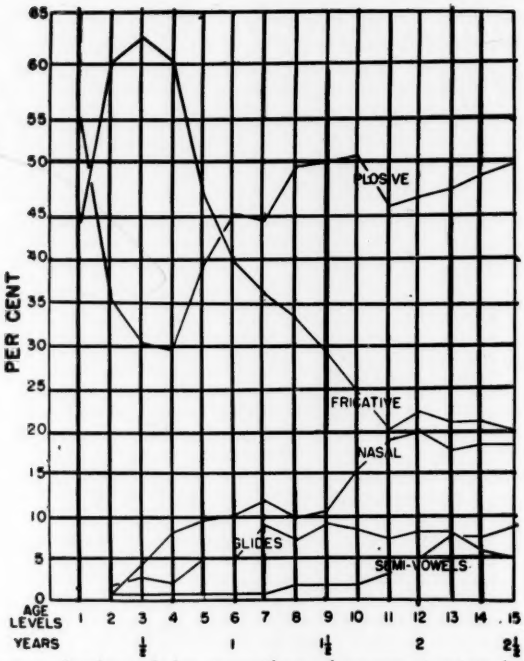

FIGURE 2. Curves showing relative proportions of consonant categories according to manner of articulation.

are not sufficient to offset its decrease.

The peculiarities, then, in the first part of the curves for plosive and for fricative consonants are seen to be due to the dropping out of the two sounds [h] and [ʔ].

SUMMARY

This is an analysis of the vocalization by infants of consonant sounds, classified according to the manner of articulation. These classes are: (1) nasal, (2) plosive, (3) semi-vowel, (4) fricative, and (5) glide consonants. Profiles and curves are used to illustrate trends in the infant's use of these sounds. The per cent of nasal sounds makes a definite increase during the period of infancy. The proportions of semi-vowels and glides are negligible at first and show a slight increase during the two and a half year period. However, they continue to remain much less frequent than plosives and fricatives in the speech of infants. During the last year and a half fricatives show a progressive decrement, while plosives remain the most frequently used consonant group.

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JOURNAL OF SPEECH DISORDERS, 1947, **12**, 405-409

The Organization of Therapy for Aphasia: I. The In-Patient Treatment Center

Joseph M. Wepman*

ALMOST all re-education for aphasia has been on the basis of techniques developed by individual speech pathologists, since the rise of the field of speech correction in the United States, during the last two decades prior to the recent war. It was only then, at centers designed to re-educate the brain-injured aphasic adults, that the task was recognized as going far beyond speech therapy. A glance at the therapeutic programs of some of the designated centers finds curricula that included many of the fundamental subjects taught in our public schools, such as reading, writing, spelling, mathematics, et cetera. In addition, the still wider concept that the language problems of the individuals suffering from cerebral insult could only be considered in the light of their total personality, rather than as isolated skill-functions, gained wider belief and had its effect upon the training programs. With the war experience behind us but still fresh in our memories, it seems important that as professional practitioners interested in this phase of personality development, the rehabilitation of the aphasic adult, we take stock of our knowledge, our accomplishments and our failures. The present paper is designed to indicate one approach to the re-education problem.

During war time and immediately thereafter, head-injured adults are seen in great number. The problem is of such magnitude that resources are made available for the immediate post-injury training of aphasia. The method of choice for training at this time is undoubtedly the in-patient aphasia center.[1] While the patient is hospitalized for the multiple physical disorders that are the aftermath of his head injury, an opportunity exists for the development of elaborate training procedures which at the very least serve to motivate and stimulate him to recovery in language. Without entering the polemic concerning the effects of training, which will be covered in a later paper, the general advantage of having the patient available for training during his physical convalescence is a tremendous one which probably does not obtain at any other time. The following program is offered not as a model but as an example of the in-patient approach to the basic problem of organization for aphasia training.

The center described in this paper is one that was in operation for eighteen months on the west coast of

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[1] Three types of training are available for aphasic adults: (1) The in-patient training center is usually a hospital resource where the patient can be seen for many hours each day over a span of several months. (2) The out-patient clinic where the patient is seen several times a week for short periods each day. (3) Individual treatment where ambulatory patients visit the therapist, or non-ambulatory patients are visited by the therapist, several times a week. In this type of treatment the work is usually supervised by the therapist but carried out by a tutor, nurse or member of a family.

the United States.[2] It took full advantage of the opportunity presented by the Surgeon General of the United States Army who authorized it and gave it his support. Since the army hospital in which it was first located was a new one, it was possible to plan its physical plant from the beginning. The writer was able to propose suggestions for the construction, physical lay-out and equipment of a center designed to accomplish a planned purpose. With the cooperation of the higher medical and administrative echelons, the physical plant, the equipment and the teaching personnel, as well as the remedial program, were under the jurisdiction of the head of the center.

Physical Plant and Equipment.

The Aphasia Center was located in a separate building attached by a ramp to the wards housing the neurological patients. It was easily accessible by slanting ramps for wheel chair and hemiplegic patients. The building was of double ward size and contained four rooms for psychological testing, three offices for interviewing, six classrooms for teaching, an occupational therapy workshop especially designed for the hemiplegic head-injured patients, a library and conference room and two administrative offices. The classrooms were of different sizes. Three were designed for individual or small group therapy and three for large group therapy. Each classroom was equipped with blackboards and with mirrors. The latter were moveable and adjustable for work which required direct imitation. The blackboards were also movable and constructed in such a way that the wheelchair patients could be seated directly under them. The tables were so constructed that the non-ambulatory patients could use them while seated in their chairs.

The occupational therapy work shop which played such an important role in the program was equipped with both power-driven and manually operated machinery. Looms, bicycle-saws, vise-equipped tables and printing press were available.

Staff.

The Aphasia Center was fortunate in having a considerable staff. Everyone interested in the problem of reeducating the brain-injured recognizes the difficulty of obtaining experienced and capable personnel. To offset this difficulty was the cooperation given the center by the army personnel and procurement division, the information and education branch and the local civil service boards.

The following staff was obtained by personal selection of the writer: four clinical psychologists, three speech pathologists, three social service workers, and six instructors. Four of the latter were obtained from the local junior college and were experienced teachers and supervisors of teachers in elementary school subjects. In addition to the immediate staff of the center, there were available three graduate occupational therapists and two physical training instructors. Added to this group the work of the center attracted the services of many volunteer workers from the local Gray Lady Organization and recreation workers from the Army Red Cross. With this not inconsiderable staff directly occupied in the total program and augmented by the interested activity of the neurologists and nurses of the neurological wards, the center was able to function with comparative smoothness.

In-Service Training.

A fully developed training program for the staff and other interested personnel was instituted. The chief of the neurology section taught neuroanatomy, the neurology of the brain and

[2]At DeWitt General Hospital, Auburn, California, Jan. 1945-Dec. 1945 and at Letterman General Hospital, San Francisco, Cal., Jan. 1946, through Aug. 1946. The physical plant described was at the former hospital.

the effects of injury upon it. The chief of the psychiatric section taught the psychogenic concomitants: the dynamics underlying the behavior of the brain-injured patients and the changes in behavior to be expected following injury to the brain. The chief of the center gave an orientation to the language problems: the type of language disorders expected and the therapy that was involved and the philosophy that governed the re-education program. In addition, the chief of neurosurgery lectured on the surgical involvements, the occupational therapists discussed the manual work that was planned, and the psychologists demonstrated and discussed the testing and psychotherapeutic part of the program.

The in-service training program continued throughout the center's existence. Case histories were discussed, therapeutic problems were aired, and discussion on teaching techniques was encouraged.

Staff Contributions.

Since the approach used in the organization of the center was a new one, the contribution of each part of the center was defined.

The psychologists were used in two capacities. As psychometricians they administered three types of examinations: (a) tests of intelligence designed at the onset of training to give information concerning the areas in which the patients could function at their highest level and areas in which the patients showed their greatest disability; (b) tests of personality which indicated the areas of psychological adjustment and maladjustment of the individual patients; (c) tests of educational achievement which indicated the levels of the patients in the various areas in which they needed re-education.[3] Added to these objective tests were screening measurements of the patient's language involvement given by the writer. These tests were used both diagnostically and for planning the individual re-education programs.

The second function of the psychological staff was in the area of individual and group therapy. The psychological well-being of each patient was considered of primary importance. In only one case where an organic psychosis existed was it necessary to call upon the psychiatric staff for assistance. In the beginning, the therapy was supervised by the chief psychiatrist; as experience was gained by the psychological staff, this supervision was limited to voluntary conferences between the psychologists and the chief psychiatrist.

Social Service Contributions.

An integral part of the results achieved was felt to be the product of the complete material given to the entire staff by the social workers. Everyone concerned in the re-education process was aware of the home background, the previous educational and vocational history, the army record and the present social outlook of the patients.

Occupational Therapy.

Using the average man's delight in working with his hands and producing useful and usable objects as a major motivational device was not original or new in concept. At this center each patient worked by direct prescription written by the head of the center. Prescription included work aimed at exercising the paralyzed muscles as well as work that required planning, concentration, perseverance and language usage by the subject. The therapists involved in the program were given the same orientation to the general and specific problems of the brain-injured patients as were the other members of the staff. They understood the language problems and stimulated the patients to use their new-

[3] At the conclusion of training each individual was examined again to show objectively the changes occurring during the re-education process.

found language abilities. They understood the personality problems and assisted the psychologists materially in overcoming their difficulties of adjustment. Through their efforts the noted tendencies of the brain-injured adult to become introverted and withdrawn were materially reduced.

The Teacher's Contribution.

Re-education for aphasia language disorders had always been the particular area of the speech pathologist. The writer believed, however, that since the program was not one of speech therapy alone, but rather, one that extended into every language function, greater success could be achieved by using the services of teachers experienced in the instruction of these many language areas. In consequence, as soon as the patients were able to communicate in any way they were given instruction in reading, writing, spelling, grammar and mathematics by trained and experienced teachers. In retrospect this does not appear to be a radical move. The use of teachers to instruct in language areas, in which they are trained and experienced, seems to be a logical outgrowth of the wider concept of aphasia as a language rather than a speech disorder. A review of the literature, however, indicates that this had never previously been attempted.

The teachers performed their tasks both in individual and group instruction, using methodology and material which had been developed previously for special education problems in the public schools and here adapted to the brain-injured adults. The success of this approach will be reported later.

The Speech Pathologist's Role.

Despite the foregoing, there was an important function to be served by the speech pathologist. Many subjects at the onset were unable to communicate in a satisfactory manner. It was necessary to reduce the speech block, to overcome the expressive and receptive malfunction, to remotivate the use of language, and to develop articulatory and rhythmic use of speech. At the onset of training the major therapeutic necessity was one of speech and language usage. Throughout the training, development of speech skill was important. Freed of the necessity of maintaining the total program and permitted to occupy themselves completely with speech re-education, they made the contributions of the speech pathologists a major one in the eventual recovery obtained.

The Curriculum.

Any careful analysis of the problems facing a head-injured adult shows the narrowness of the former concept that aphasia is essentially a speech problem. The patients of all types show disability in reading, spelling, mathematics and writing. Some patients show additional language deficiencies, such as articulatory defects and stammering, which can properly be classified as speech skill deficiencies. Most of the patients when seen originally at the aphasia center were tending to become asocial, while many exhibited the lack of inhibition or control over their behavior common to their disorders. Vocationally, the incoordinations that resulted from hemiplegia necessitated special training before they could be resolved and the patient able to earn his own way in the world. Socially, experience was necessary, at first in a sheltered way but later in an independent, free manner, in the problems of getting along with people who had not been injured. Recreationally, the paralyzed patients needed a complete reorientation to pleasure and relaxation devices. Where football and baseball had been the main recreation of the group prior to injury they needed training in pursuits that were now within their competence. Recognizing all of these factors the following program was developed. This is only a sample program adjusted to the needs of the individuals

and altered to fit the growth and progress that each individual showed.

A Typical Day's Program

0830-0900	Group Writing
0900-0930	Group Spelling
0930-1000	Individual Reading
1000-1030	Group Civic Discussion
1030-1100	Individual Arithmetic
1100-1130	Physiotherapy
1130-1200	Physiotherapy
1300-1330	Individual Speech
1330-1400	Group Speech and Reading
1400-1430	Occupational Therapy
1430-1500	Occupational Therapy
1500-1600	Recreation
1900-2100	Planned Social Activities

For different subjects, hours for group psychotherapy and individual psychotherapy were added. The total planned program for each individual was from six to eight hours daily, five days a week. Saturdays were used for field trips, nature studies and social events. Sundays were visiting days.

Summary.

A plan and a model for in-service, immediate, post-injury training of brain-injured adults is offered. It is not suggested by the writer that each of the areas developed in the particular center that is discussed is the final answer; on the contrary, it is felt that only a beginning was made and that if the opportunity presented itself again there would be many changes. What is stressed, however, is the need for a total program: one that is not limited to the restricted competencies of the speech pathologist, but rather one which recognizes the complete task and utilizes every possible agency that can assist in overcoming the many individual facets of the problem. The brain-injured adult is visualized as exhibiting a problem in every phase of living, in communication and language usage no more than in social, personality, vocational and recreational adjustment. The writer sincerely believes that the problem of language re-education should be the responsibility of the educator; the problem of speech the responsibility of the speech pathologist; the problem of personality maladjustment the responsibility of the psychologist; the problem of family and living readjustment the responsibility of the social worker. It is accepted that the neurological, neurosurgical and medical problems belong to trained specialists in those areas. It should be equally well accepted that the other common problems of the aphasic, brain-injured adults belong to these other specialists. If they are as yet untrained and inexperienced they should accept their responsibilities and seek the training and experience that will make them equal to the task. It is believed that only by this over-all cooperative approach can the maximum recovery level for the brain-injured aphasic adult be achieved.

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The Wisconsin Cleft Palate Program

Gretchen Mueller Phair*

THE problem of cleft palate has been recognized for many centuries. Aurelius Cornelius Celsus who lived from 42 B.C. to 37 A.D., a contemporary of Tiberius, described an operation on a cleft lip.

In the second century, Galen called attention to the 'lagocheilos,' lip like a hare, and the first operation recorded for harelip was that done by a French dentist, LeMonier in 1764. Roux of Paris introduced staphylorraphy, or closure of the soft palate (**2**).

Since the time of Froebelius, in 1864, we have had estimates of the incidence of cleft palate and/or cleft lip[1] reported as follows (**1**):

Froebelius in 1864 reported one in every 1,525 births.

Rischbieth in 1908 reported one in every 1,742 births.

Davis in 1924 reported one in every 915 births.

Woolsey and Horner in 1928 reported one in every 1,170 births.

Schroeder in 1931 reported one in every 1,214 births.

Sanders in 1933 reported one in every 954 births.

Problem, Procedure, and Findings

The problem in this paper was that of finding the incidence of cleft palate births in the following relationships: to the total births in Wisconsin, to the glaciated and non-glaciated areas of the state, to the month of the year, to the age of the mother, to the order in pregnancy, to the discrepancy in age between parents, to the sex of the child, to twins in the family, to rural and urban areas, to the term of pregnancy, and to the location of the cleft.

Data were gathered by the author in direct interview with the parents, and in information received from county and city nurses, from superintendents of schools, from records at the Wisconsin Orthopedic Hospital, and in birth certificates as reported to the State Board of Health. Wisconsin law requires the reporting of all congenital anomalies on the birth certificate by the doctor attending the birth. Data, for the total births used in comparisons made, were obtained from the reports of the Wisconsin State Board of Health 1935 through 1944 (**3**).

As of January 1, 1946, there were 1,134 cleft palate children under twenty-one years of age in the state of Wisconsin. For a ten-year period between January 1, 1935, and December 31, 1944 there were 567,509 children born in the state of Wisconsin and of these, 736 had cleft palate. This is .129 percent or one in every 770 births. Comparing this to the glaciated and non-glaciated sections of the state we find the percentage of cleft palate births greater for the non-glaciated areas (.144 per cent) compared with the glaciated area (.126 per cent).

Checking the month of the year that these children were born over a ten-year period, we find the largest

[1] The term cleft palate is used throughout this paper to mean cleft lip and/or cleft palate.

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number of cleft palate children born in April, and the next greatest number in July. The summer season of the year consisting of July, August, and September produced the greatest number of cleft palate children (27.16 percent).

Of the total births, those with cleft palate in the period before the war, 1935-41, amounted to one in every 749 births. In making the same comparison for the shorter period of the war years, 1942-45, we find one cleft palate birth in every 798 births. Perhaps this can best be explained because there were so many war marriages and first babies, and the percentage of cleft palate babies in first pregnancies is less than in the pregnancies from the third child and on.

In checking the age of mothers of cleft palate children in comparison with mothers' ages in relation to total births, we find the percentages very similar for the 15-19, 25-29, and 30-34 year old groups, but the 20-24 year old group produces many more children without cleft palate, while the groups of 35-39, 40-44 and 45-plus produce proportionately more children with cleft palate. The 20-24 year group produces the greatest number of children, 30.82 percent of the total born, and only 28.55 percent of the total cleft palate babies born. The 35-39 year age group produces 9.48 percent of the total births and 11.57 percent of the babies with cleft palate. The 40-44 year age group produces 3.11 percent of the total births and 4.12 percent of the cleft palate babies.

Data regarding the order in pregnancy are presented in Table 1.

Table 1 tends to support the view that older mothers have the greater percentage of cleft palate babies and that the incidence of cleft palate is relatively greater in late, as compared with early, pregnancies.

TABLE 1. Comparison of percentage of total births and percentage of all cases of cleft palate in the order appearing in pregnancies.

Pregnancy	*Percentage of Total Births**	*Percentage of All Cases of Cleft Palate†*	*Difference*
First	33.58	30.76	−2.82
Second	26.71	23.20	−3.51
Third	16.19	17.31	+1.12
Fourth	9.47	9.76	+ .29
Fifth	5.06	6.26	+1.20
Sixth	3.07	5.71	+2.64
Seventh	1.98	2.39	+ .41
Eighth	1.36	1.66	+ .30
Ninth	.87	.93	+ .06
Tenth	1.70	2.03	+ .33
Not stated	.01		
Total	100.00	100.01	

*Average from 1941 and 1944 census report where figures were given in this form.

†Reports from 543 cases by author. Information was obtained from parents.

Data relative to discrepancies in age between parents is presented in Table 2.

Table 2 does not support the view that there is a great discrepancy in age between parents, but rather tends to show that there is no great difference.

According to the statistics of the Wisconsin State Board of Health from 1936-43, male births comprised 61.5 percent of the cleft palate births as compared to 51.31 percent of the total births, while female births comprised 39.5 percent of the cleft palate births as compared to 48.68 percent of total births.

In tracing the history of twinning in the families of cleft palate children we find 9.73 percent of 226 cases of cleft palate children were twins, while 2.15 percent of the total live births in the state of Wisconsin were twins It might be well to make further comparisons of these two phenomena.

In regard to cleft palate births in the rural and urban areas of Wis-

TABLE 2. Discrepancy in age between father and mother of cleft palate children.

Years Difference	*Number*	*Per cent*
0	46	9.03
1	64	12.75
2	56	11.00
3	52	10.22
4	37	7.27
5	42	8.25
6	36	7.07
7	25	4.91
8	23	4.52
9	10	1.96
10	22	4.32
11	12	2.36
12	7	1.38
13	2	.39
14	14	2.75
15	7	1.38
16	2	.39
17	2	.39
18	2	.39
19	2	.39
20	2	.39
21	2	.39
22	1	.20
23	0	.00
24	1	.20
25	0	.00
26	1	.20
(Mother older than Father)		
1	17	3.34
2	10	1.96
3	3	.59
4	3	.59
5	2	.39
6	1	.20
7	1	.20
8	0	.00
9	0	.00
10	2	.39
Total	509	99.98

consin, we find 57.7 percent occurring in rural areas and 42.2 percent in urban areas. The entire population of the state is 54.+ percent rural and 45.+ percent urban.

The term of pregnancy should also be considered. For the seven-year period of 1937-43 (when figures for premature births were available) the percentage of total births that were premature was 4.05. Of cleft palate children it was found that 9.0+ percent were born prematurely. This difference is great enough to warrant consideration of a possible significant relationship between cleft palate and premature birth.

Wisconsin is a state of many nationality backgrounds, and relevant data are presented in Table 3.

TABLE 3. Comparison of nationality groupings.

Nationality	*Pct. of Total Population of Wis.*	*Pct. of Wis. Cleft Palate Group*
Norwegian	10.12	9.04
Swedish	3.16	2.67
Danish	2.32	2.41
German	39.90	40.64
English	3.97	9.26
Irish	7.82	6.97
French	.52	5.94
Scotch	1.38	2.58
Belgian	.98	1.64
Dutch	1.46	4.91
Bohemian (Czech)	4.56	2.37
Polish	6.02	4.30
Others	17.19	4.91
Totals	100.00	100.01

Table 3 indicates that the cleft palate children occur in all the nationality groups with approximately the same relative frequency.

With respect to classification of the clefts, pertinent data are given in Table 4.

TABLE 4. Proportions of types of clefts among 1,134 Wisconsin cases.

	Number	*Percentage*
Total Children Classified	1,134	100.00
Cleft Lip alone	247	21.78
Cleft Palate alone	294	25.93
Cleft Lip and Cleft Palate	593	52.29
Totals	1,134	100.00

Of the 1,134 children, 331 were identified as to the location of the cleft as indicated in Table 5.

TABEL 5. Location of clefts.

	Number	*Percentage*
Left cleft lip	126	38.10
Right cleft lip	81	24.41
Bilateral cleft lip	124	37.50
Total	331	100.01

Summary and Discussion

It is of interest to compare the findings from the present study with comparable data previously reported. The incidence of cleft palate children has been quoted in the literature as from one in 2,400 to one in 800, as compared with the Wisconsin data here presented showing one case of cleft palate in every 770 live births. Since the Wisconsin figures are higher than most writers report, the author interprets the lower figures as due to (a) lack of awareness of the problem, (b) inadequate reporting on the problem, and (c) greater than average mortality among cleft palate children, due at least in part probably to faulty feeding.

While writers disagree as to whether more congenitally deformed babies are born to younger or older mothers, it was found in Wisconsin that the older mothers had more cleft palate children in comparison to total births.

Though there is disagreement in previous reports as to whether more congenitally deformed children appear in earlier or later pregnancies, it was found in the present study that cleft palate children were born more often to mothers who had had three or more pregnancies.

Though a discrepancy in age between fathers and mothers of cleft palate children has been suggested as a possible etiological factor, the figures for children born with cleft palate in Wisconsin show the highest incidence when the father is just one year older than the mother, second highest incidence when the father is two years older, third when the father is three years older, fourth when the father and mother are not a year apart, and fifth, when the father is five years older than the mother. This does not appear to bear out the hypothesis that discrepancy of parental ages is etiologically related to cleft palate.

All writers seem to agree that there are more cleft palate males than females. The figures given range from approximately 52+ percent to roughly 70+ percent male. In Wisconsin, the total births for the eight-year period from 1936-43 averaged 51.3 percent male to 48.7 percent female, while for cleft palate babies the average for the same period was 61.5 percent male to 39.5 percent female. The percentage of cleft palate males was 10.19 percentage points greater than total male births, and cleft palate females 9.18 percentage points less than total female births.

In the study of Wisconsin's total births and births of cleft palate children, it was found that twins were more prevalent among cleft palate children. According to 1936-43 birth records 2.15 percent of the total births were twins. Of the 226 cases of cleft palate children where histories were available, 9.73 percent were twins.

Writers, especially after World War I, suggested that there were more rural than urban cleft palate cases. In Wisconsin the total population is 54 percent rural and 45 percent urban. The cleft palate births in Wisconsin were 57.7 percent rural and 42.2 percent urban.

The term of pregnancy was studied in the Wisconsin investigation. For all live births there were 4.05 percent premature births in the seven-year period from 1937-43. Of cleft palate babies 9 percent were premature. This may be significant and should be studied further.

Comparison of total population and cleft palate population in Wisconsin with respect to nationality groups revealed no important differences.

All writers on cleft palate incidence agree that the cleft appears more often on the left and bilaterally than on the right. Several writers agree that it is four times as frequent on the left. Others give percentages ranging from 47 percent to 60 percent on the left. Wisconsin's figures for 331 identified clefts are 38.10 percent on the left, 37.5 percent bilaterally, and 24.41 percent on the right.

The Wisconsin Program

Since 1917, doctors attending the birth of children born with any congenital anomaly in Wisconsin have been required to report such cases to the State Board of Health.

In 1931, the Board of Health began to report these congenital deformity cases to the Bureau for Handicapped Children, and since that time the Bureau has kept a record of all work done on children so reported. Surgical care for cleft palate children is accepted as a matter of course and as soon as a child is reported, help in planning a program is offered the family physician so that immediate action can be taken, if necessary. Cleft lip surgery is usually done within ten days after birth, or when the child is best able to stand surgery. The palate is usually closed at an age of from 18 to 24 months.

At first surgical correction was all that was deemed necessary. However, since 1943, the year of the first Speech Training Center for Cleft Palate Children, the primary factor in rehabilitation has been the utilization of the repaired palate for speech. The entire rehabilitation was not considered finished until the best possible result had been obtained from both a functional and cosmetic standpoint. If the palate was not long enough, further surgery was planned to lengthen it. If the desired result could not be accomplished surgically, plans were made for a prosthetic appliance. In some instances surgery was not feasible because of relevant physical conditions. In such a case, also, a prosthetic appliance could be considered. The work of the prosthodontist was included in the Wisconsin program in 1945.

Also in 1945 an orthodontist was added to the staff of the Wisconsin Orthopedic Hospital. If we are to judge the rehabilitation of a cleft palate child by his speech we must consider the problem of orthodontia, since poor alignment of teeth can have such a detrimental effect upon speech. Since the program was started 33 children have had orthodontic examinations and some have begun treatment. This fall, 1946, the Wisconsin Orthopedic Hospital has created a residency in orthodontia and at present the resident is working with the orthodontist in consultations and planning.

The prosthodontist has now completed artificial palates, or obturators, for three children. Nineteen other children have been examined and plans made for the construction of artificial palates.

The Bureau for Handicapped Children has a medical social worker on the staff who works at the Wisconsin Orthopedic Hospital and handles the social problems which arise both with the patient himself and with the parents. This social worker works very closely with the plastic surgeon, orthodontist, prosthodontist, and speech therapist.

A child welfare consultant who is also a social worker does much in the program that is planned and executed for speech training of cleft palate children at the Speech Training Center during the University summer session. She finds the boarding homes and handles all social problems in this connection.

The entire rehabilitation of a cleft palate child is a long-time proposition. It begins with his birth and continues until he has been made a satisfactory member of society. There must be continuity in the program planned for him. The correlation of all available services is necessary to accomplish this end. This we have tried to do in Wisconsin.

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Studies In Clinical Techniques

II. Normalization of Chewing, Sucking and Swallowing Reflexes in Cerebral Palsy: A Home Program.

Martin F. Palmer*

THE IMPORTANCE of the chewing, sucking, and swallowing reflexes in cases of cerebral palsy is beginning to be emphasized in the general literature on the correction of deformities in cerebral palsy. Since the application of these reflexes in corrective procedures is not too well-grounded, and since the statements found in the literature are often misleading and of little help to prospective clinicians, it seems wise to review briefly the development of this particular series of techniques.

I

In 1925, Muyskens (**4**) presented at the University of Michigan a Doctoral dissertation entitled, 'The Smallest Aggregate of Speech Movement Analyzed and Defined. The Hypha.' This dissertation included material on chewing, sucking and swallowing. In lectures to students from 1925 on, Muyskens has emphasized constantly the importance of these vegetative reflexes in the problems of the speech disorders generally and particularly in cerebral palsy. The material from Muyskens' original study (**4**) was developed further in 1932 by Shohara (**6**) in an analysis of these reflexes and their applications to the development of normal speech. In 1938, Meader (**3**) also called attention to the place of these reflexes in the general normal developmental picture.

While it may seem obvious at the present time to devote attention to these reflexes in connection with problems of cerebral palsy, credit for the first observation must definitely be given to Professor Muyskens. In recent years Froeschels (**1**) and Jellinek (**2**), and the pupils of Dr. Froeschels, have studied particularly the place of chewing in the speech picture. Their material is essentially an independent duplication of some of Muyskens' earlier work. During the past fifteen years, an independent research and clinical program at the Institute of Logopedics has made possible a series of techniques aimed at developing the essential theoretical importance of these reflexes to any corrective program in speech disorders. Only one publication from the Institute (**7**) refers to this program, and it seems wise at the present time to publish a series of articles describing these contributions.

II

At the Institute of Logopedics, after tests of tongue function, to be described in a later article, the following standard program for parents (printed on a small card) is presented to the parents of the cerebral palsied child:

HARD FOOD ORIENTATION PROGRAM

1. Dry sliced white bread in the oven or on the window sill until it is VERY hard. Let the child have a piece of such bread to eat at each meal, with no butter on it and nothing to drink with it until it is all chewed and swallowed. Sugar may be put on the bread to add to the taste, but no softening spread. Zwieback, rusks, and crackers may be substituted occasionally.

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2. Let the child have all liquids through straws.
3. Let the child have all the chewing gum he or she wants. He should be chewing on something most of the time. Raw carrots, potatoes, turnips, and so forth, are valuable. In general, try to include in the meals, besides the bread, something that will be difficult to chew and swallow.

CAUTION: This is not a diet but is intended to improve the chewing, sucking, and swallowing reflexes from which speech develops. This program must be continued until such time as the child speaks well, no matter how long this takes. Please be faithful and keep this going, even though you see no improvement at once, because it will make it very much easier for the expert speech instructor to work with your child. Since this program is not a diet, the child may have anything else that he wants to eat as advised by his physician.*

*The 'caution' was developed as the result of actual parental misunderstanding of the program and should be included by any other clinic using this material.

The term 'hard food orientation program' is a paraphrase from several lectures by Professor Muyskens in which he called attention to the fact that, in the time-space-frame development of speech, the period at which these vegetative reflexes come together for the purpose of serving as a substratum for the development of stereotyped language signals should be known by its physiological term, 'orientation.' This term is defined as that period when two or more reflexes, vegetative in character, come together to carry out a higher, less vegetative function.

The 'hard food orientation program' form is given only to cases for whom tests show that there is an indication of need for the program. The tendency, clinically, is to err in the direction of advising it when it is not indicated. A later article in this series will describe the results of this general procedure.

Many cases of cerebral palsy are unable to perform part or all of this program. The emphasis is not on whether the child has spastic paralysis, athetotic paralysis, or any of the other clinical types of cerebral palsy. The effort is to develop a program which the parents may carry out at home. Developing normal reflexes in these children is a highly skilled procedure not to be carried on by parents.

III

Particular difficulty is found in teaching cerebral palsy cases to suck through straws and to chew gum. The individual history frequently shows extreme difficulty directly in these mechanisms, and it is probable that most of the severe cases will be unable to carry out either activity until a home program is instituted. The following detailed instructions for helping the child to strengthen these reflexes are a substantial part of this home program as directed by the Institute of Logopedics.

Teaching sucking through a straw:

To teach a child to suck through a wax or cellophane straw, parents are advised to purchase a one-foot length of dental rubber tubing which has an internal diameter about equivalent to that of a wax straw and which has a wall thick enough so that the tube will open again immediately when bitten. The exterior diameter of the tube should be less than half an inch. One end is dipped into a fluid which the child particularly likes. Some children prefer gravies and meat extracts and others prefer syrups. The finger is placed over the other end of the tube and from 2 to 3 inches of the tube are thus filled with the fluid. (Before using a rubber tube for the first time, the parents are cautioned to wash it out well so that there is no rubber taste.) The tube is then held horizontally and the fluid is allowed to run into the child's mouth. This is done at a definite hour, at least once a day—preferably two or three times—and is done four or five times each period. This schedule must be rigidly observed. This point is es-

sential since this is a conditioning program. The process of holding the tube horizontally is carried on from four to six weeks, or until the parents realize that the youngster is aware that the tube contains a very desirable liquid. When this awareness is noticed, the parent next dips the tube into the solution and raises it to the child, this time holding the tube slightly below the horizontal so that it will not flow. The child is then encouraged to put his lips around the tube, to run his tongue around it and see if he can find the taste. The tube is raised to the horizontal several times and lowered again below the horizontal so that the youngster begins to want to work his tongue into the hole and pull it away and this tends to produce a weak sucking motion. The parent manipulates the freedom of flow with his finger. When a child can suck with the tube held two inches from the horizontal at the end farthest from the mouth, the tube should be brought down a little, about once a week. Each time it should be moved down from the horizontal and up from the lower position until the child is definitely able to suck.

This procedure has not yet failed to develop a volitionally controlled sucking reflex. The child is allowed to use the rubber from four to six weeks and then metal, cellophane, or wax straws are substituted for the tube. Most children will learn rapidly not to bite the tube and this is what is desired. The ability to suck through a wax or cellophane straw without biting it produces a very specific motor control of the jaw depressors and elevators, the lips and tongue. For children who cannot learn to do this without biting, Mr. Clyde Berger, Librarian of the Institute of Logopedics, and Professor Albright of the Physics Department of the University of Wichita have made an aluminum tube weighted at one end which will serve the purpose.

Teaching a child to chew gum:

The process of teaching a child to chew gum is a conditioning experiment similar in many respects to teaching a child to suck through a straw. A stick of ordinary chewing gum is just as satisfactory as a piece of bubble gum for this purpose, although bubble gum, being pink, is somewhat more attractive to children and the consistency is somewhat better than ordinary gum. A piece of gum loses its first sharp flavor about a minute after it is introduced into the mouth, and it is at this time or after that the child will attempt to swallow the gum if he does not know how to control it. It is a very simple matter to prevent this. A child is given a small piece of gum, the amount of it (the number of sticks or parts of a stick) depending on the size of the child. This is rolled up and placed in his mouth. The individual should do this at a certain hour each day, using a watch for exact timing. (He may do it more than once, but once daily is sufficient.) At the end of 40 seconds, the finger is inserted into the mouth and the gum retrieved. This is done for about a week to two weeks. At the end of the first period, the time is increased by ten seconds for a week, and at the end of that week it is increased by ten seconds again until the child is chewing for many minutes without swallowing. He gradually begins to understand that gum is an article which is not to be swallowed. If the tongue is unable to handle gum, special techniques, which can only be carried out in the clinic, will have to be used.

It should be remarked that this whole process also has an effect on the ever-present drooling of these cases. This problem is usually not due to any extra stimulus from the central nervous system, or any excessive secretion of saliva, but is almost always simply an indication that the sucking and swallowing reflexes are

not normal and saliva accumulates in the mouth without being swallowed. Of course, it is possible that a particular case may not swallow and is still being fed by gavage. The usual case, however, does swallow. What is desired from this program is a regularization, inhibition and conditioning of the swallowing process, in order that the portions of this process which will be useful in speech signals later on will have a chance of coming under control. This is itself an indication that speech work with the case will be rather unsatisfactory until the drooling is either absent or highly diminished. The program suggested, together with the skills to be analyzed in later articles, almost completely corrects this condition in cerebral palsy, and if anything can be said with certainty about the improvement of at least the intelligent cases, it can be stated that the drooling problem is unnecessary and can be corrected. It is interesting to observe that this program seems to be effective, regardless of the location of the lesion or the type of symptomatology which exists. This is probably due to the fact that these reflexes are essentially vegetative in character and essential to life and that the compensating mechanisms in the central nervous system for carrying these out are very easily oriented.

Summary

A historical note is given relative to the credit which should be accorded generally to Professor J. H. Muyskens for calling the attention of the professional world to the importance of chewing, sucking and swallowing in speech disorders. The home program advised for parents by the Institute of Logopedics at Wichita, Kansas, is reproduced together with the general home instructions given parents relative to the development of sucking and gum chewing at home in their children. Drooling is nearly always corrected by this program and additional and similar procedures in the clinic. Clinical workers are advised not to administer this program without careful checking since many of these cases will require attendance at the clinic before regular integration of the chewing, sucking and swallowing reflexes can be expected.

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Why Stammerers Suffer

Satya Narayan Purohit*

The following article was received from Satya Narayan Purohit of Bilara, India. In an accompanying letter the author states 'I am a stammerer myself.'

The author does not, I believe, claim to be a professional speech pathologist. His article is presented to readers of THE JOURNAL *because it appears to have merit as a contribution to the peculiarly revealing literature in this field produced by speech defectives themselves, and also because it throws some light, of which we here in America have had little indeed, upon problems of interest to speech correctionists in the Far East.*

The article has been only slightly edited and care has been taken to preserve the stylistic character of the original manuscript.—THE EDITOR.

STAMMERING has been attracting attention of many thoughtful people—doctors and psychiatrists, educationists and politicians, elocutionists and ecclesiastics—all over Europe and America for a very long time. Especial attention was given to it, and research on the subject was begun after the first World War. However, we Indians, with our characteristic indifference towards worldly woes and evils, have rather taken it 'philosophically,' not considering it worthwhile to give even a little attention to it.

A Neglected Subject.

Stammering presents no problem to the Indians, and consequently, with the exception of a few stray unauthoritative articles in some magazines, no standard literature has been published in the Indian press on the subject. There has been no single attempt whatsoever to understand this problem and to think about the etiology and the line of treatment.

A stammerer myself, I have been suffering severely from the malady for the last ten years. Since there is a very great dearth of specialists, and since those who are available charge exhorbitant fees, I have come to the conclusion that stammerers in India must compromise themselves with their lot.

The question arises, however—'Cannot stammerers live happily in this world?' The answer to this question lies in the solution of the problem—'Why do stammerers suffer?'

Being a student of psychology, I have studied the above problem in my own case through the method of introspection, and also through observation of other stammerers.

Attitude of Fellow-Beings.

My hypothesis is that the suffering or not suffering and living happily of a stammerer mostly depends upon the attitude of his fellow-beings toward him. People have given sermons from times immemorial to stammerers to do this and do that, to cry hoarse in the wilderness (literally), to stretch their tongues, to speak with whole nuts in their mouths, to take a long breath before speaking, to speak slowly, etc., etc. But this time, I, one of the stammerers, would like to put a suggestion before the non-stammering members of *homo sapiens* to make them search their own hearts and to persuade them to find out whether or not their own attitude toward stammerers, sympathetic or otherwise, might be the real cause of the suffering or living happily of the stammerers. So far as I have been able to determine, the attitudes of people

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around a stammerer (with the exception of indifference which does not affect him in any way) are sympathy, snubbing, sneering, and morbid surprise.

A stammerer cannot help stammering unless he is completely and permanently cured. If his fellow-beings want him to live happily without experiencing every now and then those mental agonies which can be fully understood only by a fellow sufferer, the most important thing for them to do is to adopt an attitude of real sympathy. Mark the word *real*. Artificial sympathy is worse than indifference or open hostility. It is at once recognized by a stammerer: a counterfeit coin, even in a heap of coins, does not remain concealed from the expert eye of a cashier.

The Need for Sympathy.

A stammerer, when treated sympathetically, will take less time to say what he wants to say and is able to speak with great ease and comfort. Sometimes, when it becomes absolutely impossible for him to utter a single word, he must be asked to write what he wants to say. If this practice is resorted to, stammerers will be saved from a great drain of energy every day in such activities as the purchasing of tickets at a railway station or at a cinema, buying a match box or a betel-piece, a razor or a shaving stick, while attending to the roll-call, taking their oral tests in a school, college, or university, while being interviewed for a job, and in a host of other situations which, it goes without saying, are met with the greatest ease—in the twinkling of an eye—by non-stammerers.[1] This drain of energy is, of course, caused by the terrible fear which they experience—the phobia being associated with their having been snubbed or sneered at or misunderstood in the past, or becoming a prey to morbid surprise in these and similar situations. Thus we see that if a stammerer is treated sympathetically there will be a great saving of time and energy on the part of both the stammerer and the listener.

The people who snub or sneer at stammerers are either ignorant or misinformed, thinking that they stammer because they like to and that they can easily avoid doing it. These are the people who take sadistic delight in torturing the persons who have some organic or psychological defect by snubbing or sneering at them. When snubbed or sneered at, a stammerer may hit back with a raillery, and if this does not succeed, with fists if he is strong enough. But when he is thought abnormal, and thus becomes a prey of morbid surprise, there is no way out but to pocket this peculiar affront. At least in my case, this attitude on the part of other people has been the cause of greatest suffering. Nobody wants to be taken as abnormal, even though he is. A stammerer, not being able to use his speech well, is no more abnormal than a person who is not good at football, being unable to use his legs well, or a person who is not good at tennis, not being able to use his hands skillfully. The stammerer, therefore, not being abnormal, must naturally take it extremely ill when he is considered so.

In conclusion, a stammerer—until a specialist comes to his rescue and cures him—must neither be snubbed, nor thought abnormal, nor be sneered at and 'made a laughing-stock,' a target of typical indecent joking and mocking which will turn his life into a virtual hell through no fault of his own. He must be treated very sympathetically and be given a chance to lead a happy life on this crust of earth.

[1]Professional speech correctionists will, of course, recognize the highly controversial character of the advice that stammerers be encouraged to write instead of speak. It has seemed editorially advisable, however, to leave the statement as it stands, as the expression of one stammerer's point of view, and to leave its evaluation up to the individual reader.—THE EDITOR.

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A Study of Nondirective Counseling As Applied To Adult Stutterers

Donald A. Schultz*

DIRECTIVE COUNSELING or superimposed advice as to socially acceptable personality goals and procedures for arriving at them have formed a large measure of the counseling of the past and of present-day psychotherapy. Nondirective counseling, on the other hand, assumes that the client knows his problems better and can work out more acceptable answers to them than the counselor, if a counseling atmosphere of acceptance can be provided for his emotional catharsis and re-evaluation. Stutterers, almost universally, have been approached in speech clinics in an essentially directive fashion with ready-made goals and ready-made routines or 'cures' of many varieties. Experimental evidence is very limited as to the differences between the personality problems of stutterers and those of neurotics amenable to approach by means of the nondirective counseling technique.

The purpose of this study was: (1) to discover the important adjustment problems of stutterers as revealed in a nondirective counseling situation, and (2) to compare adult stutterers' responses in a nondirective counseling situation with those of psychoneurotics.

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The Groups Studied and Materials Used

The stuttering group.

Twenty adult stutterers, with a mean age of 29 years, were counseled in this study. The group was composed of 18 male subjects, 10 of whom were ex-servicemen, and two women. Higher Form D of the Otis Self-Administering Test of Mental Ability was given, with the resultant mean intelligence quotient of the group being 113.5. These subjects, with the exception of two cases, were enrolled in the University of Southern California class for stutterers. Concurrently with these conferences, the group attended twelve weekly two-hour mental hygiene class sessions.

That the subjects were capable of profiting from nondirective counseling was hypothesized. This hypothesis was based on their asking to be admitted to the class for help with their speech problems. Generally, they were within the range of criteria given by Rogers (1) for the selection of subjects for this type of psychotherapy:

1. The individual is under a degree of tension, arising from incompatible personal desires or from conflict of social and environmental demands with individual needs. The tension and stress so created are greater than the stress involved in expressing his feelings about the problem.

2. The individual has some capacity to cope with life. He possesses adequate ability and stability to exercise some control over the elements of his situation. The circumstances with which he is faced are not so adverse or so unchangable as to make it impossible for him to control or alter them.

3. There is an opportunity for the individual to express his conflicting tensions in planned contacts with the counselor.
4. He is able to express these tensions and conflicts either verbally or through other media. A conscious desire for help is advantageous, but not entirely necessary.
5. He is reasonably independent, either emotionally or spatially, of close family control.
6. He is reasonably free from excessive instabilities, particularly of an organic nature.
7. He possesses adequate intelligence for coping with his life situation, with an intelligence rating of dull-normal or above.
8. He is of suitable age—old enough to deal somewhat independently with life, young enough to retain some elasticity of adjustment. In terms of chronological age, this might mean roughly from ten to sixty.

Each conference was completely recorded by means of a magnetic wire recorder. This recorder required no attention from the counselor during the conference, the limit of recording time on one reel of wire being about 72 minutes. Transcriptions were then made of all recordings from sound to typewritten form. All subjects were told that the conferences would be completely recorded and transcribed, and filed in their confidential case record folders.

The psychoneurotic group.

This group was composed of 239 psychoneurotics whose case analyses were reported by Strecker and Ebaugh (2). The analysis of this group was used as a basis for the comparison of stutterers with presumably typical psychoneurotics.

Techniques and Results of the Individual Conferences

Techniques.

Conferences between the author and each subject were one week to ten days apart and were always held in the same recording room on the university campus. Conferences were of one hour's duration each. However, a subject was permitted to terminate any interview when he felt he had no more to say. The number of interview sessions for each subject was determined by himself, or by his desire or lack of desire for further appointments.

In the first interview each subject was given a brief explanation defining the subject-counselor relationship generally. He was told that no censorship or advice would be given him; that he was free to say anything about any of his personal problems that he liked, for emotional catharsis; that if the counselor reflected to him an expressed sentiment which he felt was not entirely true to his feelings, he should correct the counselor's ideas on the matter. When an outright request for advice or for interpretation of situations was made, the counselor further defined the counselor-subject relationship. Here a statement was made to the effect that the advice requested expressed a felt need for help with his problem, and that such help might not be needed by the subject when more of his sentiments and facts on the matter were more fully expressed. When the advice asked required a simple statement on a well agreed-upon fact, the advice was given.

Subjects were constantly encouraged to continue to express their feelings on any problem, either present or past, on which they felt a need to clarify their thinking or feeling. The counselor always attempted to accept and reflect the sentiment or connotative values being expressed, rather than the denotative facts delineated.

Results of the conferences.

With the typewritten verbatim record of the conferences as the sole source, a summary was compiled of each case. The analysis was based upon the emotional needs of the individual with a consideration of the manner in which those needs were satisfied or frustrated. The needs used as criteria for this summary are more completely explained by Travis and

Baruch (4). Three general age levels, infancy, childhood and adulthood, were used for the classification of emotional needs. These needs were sub-classified under the two headings: (1) affectional, warm, security-giving satisfactions, and (2) self-enlarging, ego-building, adequacy-giving satisfactions. One such synopsis follows:

Case VIII.

This subject, with an I.Q. of 124, was 26 years of age, and had five conferences with the counselor. He had studied for the priesthood at one time and later completed radio and radar school in the armed forces. He is the eldest of nine children.

Infancy.

Security, affection: His father was drafted into the Army when the subject was three months old. Of his parents he says, 'My parents were just about as fine as you could think of—I'm just the odd number in the collection. . . . My mother babied us all, she loved children.' The children were born in rapid succession; he feels that, as the first, he did not get enough to eat, as a baby. He had a great fondness for two aunts on a farm near his home. As early as three, he and his younger sister ran away to the farm. He started school at the age of five.

Ego-building, success: His sister, one year younger, was a leader and very superior. She and the subject started to talk at about the same time—when he was two. The mother instilled family honor and pride in all of the children.

Childhood.

Security, affection: The subject feels he was sheltered too much—not allowed to have toys which might be dangerous, such as a gun or bicycle. He was constantly running away from home, or from any place where the family was visiting. He feels that he was not running away from anything, but had an insatiable curiosity about new places. His parents have always been aware of his stuttering and tried to help him the best they knew how. The subject masturbated 'for about ten years.' This caused intense worry and feelings of guilt, particularly since it was considered a sin in his church.

Ego-building, success: He started to stutter in the second grade, where he had a very severe teacher. He says, "I felt inferior as the devil.' His closest pal was a superior hero-type boy, who dominated the subject completely. In frequent fist-fights with other boys, he invariably emerged as the loser. 'Dizzy' was one of several nicknames he acquired in school. He failed in the fourth grade, and his sister, one year younger, caught up with him; she was a good student and received better grades than he did. At sixteen he chose to go to a prep school to prepare for the priesthood. He feels he enjoyed this school, although he says he 'had no contact with the rest of the world.' After about three years in this school he realized that, with his stuttering, he would never be able to perform the duties of a priest. One day a friend stopped at the school for a visit and induced the subject to hitch hike to the West Coast with him. From then on he hitch hiked about the country, feeling he was a failure. 'I didn't think I'd ever amount to anything,' he says. He dropped his religion completely, and had nothing whatsoever to do with girls.

Adult.

Security, affection: Returning home, in the late 1930's he had odd jobs about the town—'no 'count jobs.' When the routine became too tiresome, he'd be off on another hitch hiking venture. However, he feels he enjoyed being home and working around the house and garden. At this time he read profusely.

Ego-building, success: The subject speaks highly of the benefits he derived from military training. He worked hard to attain air combat duty, and succeeded. However, one evening, when on duty, the Operations Officer telephoned him. The subject stuttered badly during the conversation and thereafter was grounded. He is satisfied with his present employment, but now looks forward to a better job; he is taking a course in television. He drinks infrequently and moderately.

Omissions.

There were no notable omissions.

Insights and actions taken.

He says, 'I'm still where fellows are at fifteen and sixteen when it comes to social activities. I had a failure psychosis for years and years and years—I didn't see any point in even trying to do things, I knew I wouldn't succeed.' He is taking dancing lessons now, and would like to join two or three social groups; he has also returned to his church. To help overcome his fear of the telephone, he now sits down and, at random, 'phones anyone he knows. A more 'impersonal' attitude toward his stuttering, he feels, will be a great help—to go on and do things whether he stutters or not. In his last conference he observed that he wants to smile more; he feels that he wears too serious an expression.

AN ANALYSIS OF EACH SUBJECT

Category selection.

If three or more subjects (15%) made statements of a very similar nature, a category was retained for the classification of those expressions. Numerous so-called psychoneurotic symptoms were listed, but they do not appear among the categories because 10% or less of the subjects of this study made statements that could be so classified. All of the original categories were not retained because of the extreme complexity arising from such a multifarious consideration. While there is some overlapping of categories, the predominance of one phase in each category is maintained.

Reliability.

The author chose a common definition for each of the fifty categories used on the following pages. These definitions were used as criteria in classifying each statement made by each subject; then the statements were re-classified. The differences or discrepancies were less than 1%. Next, a college graduate, unskilled in personality and counseling, classified the statements and again discrepancies in classification were less than 1%. Categorical tabulations of statements were then done a third time by this counselor, from the transcribed verbatim accounts. Differences or discrepancies in tabulation or classifica-

TABLE 1. Percentages of 20 stutterers presenting specified reactions in nondirective counseling situation.

Types of Reaction	%	*Types of Reaction*	%
Emotional thwarting:		Less stuttering when speaking to inferiors	55
Dominant or irritating parent	75	Speak without stuttering in some situations	55
Poverty of everyday satisfactions	75	No stuttering when alone	45
Lack of home affections, feelings of belonging	70	Atypical social attitudes:	
Very high standards in home or school	70	Antisocial reactions	75
Sex worries	60	Ambivalence	65
Dominant or favored sibling	35	Subject had odd appearance	65
Perversions	20	Often dependent on others to speak for him	35
Asocial behavior:		Self-regard:	
Strong introvertive tendencies	70	Powerful feelings of inferiority	90
Hypercritical	45	Feelings of not being a normal person	60
Frequent lying	40	Frequent feelings of panic	40
Quarrelsome attitude	35	Preference for job requiring more speech	40
Temper outbursts	30	Feelings of being abnormally slow	35
Frequent stealing	15	'People are looking at me'	25
Ran away from home	15	Personality type trends:	
Mental shock:		Hypersensitivity	95
Mental trauma	90	Over-controlled	90
Stuttering, psychogenic cause	45	Anxiety	85
Close associate's illness or death	25	Frequent blushing	65
Possible physical causative factors:		Preference for one parent	65
Physical trauma	60	Cycloid	55
Close relative stuttered	60	Depressed	45
Childhood physical morbidity	35	Overt disinclination	40
Genetic and psychic cause	30	Mental blocks	25
Other speech defects	30	Perspiring in simple social situations	20
Delayed speech	25	Inability to concentrate	20
Shifted handedness	15		
Social speech reactions:			
Submissive	100		

tion remained less than 1% on each reading by each of the two persons classifying the statements on a total of four complete classification processes.

The categories selected, and the percentages of responses falling into each category, are presented in Table 1.

Results of the Personality Test.

After all of the counseling sessions were completed, the subjects took the Adult Form A of the California Test of Personality, Adult Series (3). High ranks in this test are positive.

Table 2 presents a summary of the test results, with the scores indicating the median percentiles for the group. This profile of stutterers as a group, with a total adjustment median percentile of 25, suggests that they are surpassed by three-fourths of the students on whom the percentile norms of the test are based. Community relations, with a median at the 55th percentile, is the only category in which the stutterers exceeded the social norms.

TABLE 2. Median percentile scores of 20 stutterers on Adult Form A of the California Test of Personality, Adult Series.

Type of Adjustment	*Percentile*
Self adjustment:	
Self reliance	10
Sense of personal worth	45
Sense of personal freedom	50
Feeling of belonging	25
Withdrawing tendencies (freedom from)	10
Nervous symptoms (freedom from)	15
Median percentile, self adjustment	15
Social adjustment:	
Social standards	50
Social skills	10
Anti-social tendencies	30
Family relations	45
School, occupations relations	45
Community relations	55
Median percentile, social adjustment	35
Median percentile, total adjustment	25

A COMPARISON WITH PSYCHONEUROTICS

Strecker and Ebaugh (2) classified common characteristics of 239 psychoneurotics in 20 categories. The verbatim counseling sessions of the 20 stuttering subjects of this study were analyzed into the same 20 categories. In the absence of any statistically established norms, a commonly used definition for each of the 20 categories was selected to establish a set of criteria for the classification of each statement made by each patient. These criteria are stated in such a way as to give a definite cutting line between the so-called normal and the undesirable extremes of deleterious effects. The categories and a comparison of the differences between the stuttering group and the psychoneurotic group are shown in Table 3.

SUMMARY AND CONCLUSIONS

The 20 stutterers and 239 psychoneurotics compared in this study were found to be different to a statistically significant degree with respect to two categories of reaction: (1) anxiety, and (2) the routine use of sedatives.

Anxiety was shown by this stuttering group more frequently than by the psychoneurotic group reported by Strecker and Ebaugh (2). Fifteen per cent of the psychoneurotics used sedatives routinely, as against none of the stutterers reported.

Stutterers excelled the psychoneurotics in percentages classified in 14 of the 20 negative categories reported.

The psychoneurotic group excelled the stuttering group in the percentages of six categories of the 20. These six categories were: constitutional predisposition, financial crisis, overconcern expressed regarding their symptoms, marked hypochondriacal trends, and sedatives used routinely.

The stutterers' chief problems, as shown by the results of this study were:

(1) Stutterers were submissive. They spoke better when they were talking to inferiors, talking to certain people, or were alone.

(2) Stutterers were hypersensitive and inhibited, or over-controlled. They, as a group, had frequent blushing, tended to love one parent and fear the other, and display anxiety. Their other personality trends were not as strongly representative of the group as those immediately above.

(3) Mental trauma seemed evident in the life histories of nine out of ten of the stutterers in the group studied.

(4) A poverty of everyday satisfaction, very high standards, dominant or irritating parents, and lack of affection in the home, was characteristic of these stutterers. Six out of ten of them had sex worries of some kind.

(5) Seven out of ten of the stutterers had strong introvertive tendencies.

(6) Six out of ten of these stut-

TABLE 3. A statistical comparison of the differences between 20 stutterers and 239 psychoneurotics with respect to reactions manifested in a nondirective counseling situation and case history findings.

Name of Category	*Strecker's 239 neurotics* %	*20 stutterers* %	*Difference* %	*S.E.*	*C.R.*
Psychoneurotic predisposition:					
Unfavorable early home life	70	85	15	8.5	1.9
Constitutional predisposition	85	60	25	11.	2.3*
Chronic disease, sex conflict, financial crisis	12	45	33	11.5	2.9
Common precipitating factors in psychoneuroses:					
Sex disturbances	22	35	13	11.	1.2
Accidents with or without injury	13	35	22	10.9	2.
Marital crisis	12	15	3	8.3	.3
Financial crisis	11	10	1	2.8	.4*
Operations	10	35	25	10.9	2.3
Death or illness in the family	9	25	16	9.9	1.2
Commonest physical findings:					
Operative scars	23	35	12	11.2	1.1
Focal infection	9	10	1	7.	.1
Physical defects	9	10	1	7.	.1
Commonest mental findings:					
Overconcern of symptom	89	80	9	9.2	1. *
Anxiety	45	85	40	8.6	4.7
Fears	33	40	7	11.4	.6
Marked hypochondriacal trends	19	15	4	8.6	.5*
Pre-clinical treatment characteristics:					
Seen by many doctors	34	20	14	9.5	1.5*
Operations resorted to	19	25	6	10.	.6
Sedatives used routinely	15	0	15	2.3	6. *
Quacks consulted	10	25	15	10.	1.5

The following formula was used for determining the standard error of a percentage:

$$\overline{\sigma_P} = \sqrt{\frac{P_1Q_1}{N_1} + \frac{P_2Q_2}{N_2}}$$

*More psychoneurotics than stutterers present reaction or findings.

terers had blood relatives who stuttered. Half of them believed their stuttering had begun by the age of eight years or before.

(7) This stuttering group tended to be antisocial, ambivalent, and to be atypical in general appearance.

(8) Nine out of ten of these stutterers had powerful feelings of inferiority. Six out of ten had feelings of not being a normal person.

(9) An objective personality test, given at the end of the nondirective counseling sessions, tended to confirm the results of the subjective conclusions previously made in this study.

(10) A statistical comparison of the stuttering group with a psychoneurotic group, reported by Strecker and Ebaugh (**2**), showed a marked similarity was evident.

These stutterers had many symptoms common to psychoneurotics. The stutterers of this study had many serious social and self-adjustment problems.

Although the stuttering symptom is known to exist among all neurological and psychological personality types, some stutterers may approach very closely to the so-called normal, when and if that group can be defined. Further studies, treating stutterers and psychoneurotics with the nondirective approach and other psychotherapeutic methods, will unquestionably define more clearly the psychological status of the non-psychopathic and non-psychotic stutterer.

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JOURNAL OF SPEECH DISORDERS, 1947, **12**, 428-430

Repressed Hostility As A Factor In Adult Stuttering

James A. Abbott*

IN THE treatment of secondary stuttering in adults by means of modifying the stuttering block and teaching the individual to stutter in a more socially acceptable way, it is a frequent clinical observation that the stutterer behaves at times as though he were unconsciously reluctant to part with his symptoms. His efforts, though consciously sincere, do not appear to be 'all out' attempts. It is as though certain unconscious factors strongly resisted any change for the better and struggled to preserve the *status quo*. Assignments are postponed or 'forgotten.' Opportunities for improvement are overlooked in a manner that is not in keeping with the seriousness of the undertaking. Another observation, made by those who have worked with adult stutterers, is that a success in a difficult speech situation is often followed by a period during which the stutterer fails in his therapeutic efforts.

It is the purpose of this paper to suggest a mechanism by which repressed hostility toward his listener may in some cases generate guilt feelings which may interfere with the success of the stutterer's therapy. This is by no means offered as being the only factor operating contrary to the stutterer's conscious aims. Other factors undoubtedly exist, but they are not within the scope of this article.

I

Let us consider the conscious attitudes of the stutterer toward his listener or audience at the moment of the stuttering act. First and foremost is his very great fear of rejection, and accompanying this fear is an anxious desire to be accepted and liked, unconditionally, by his listener. Any implied or expressed disapproval or rejection on the listener's part is reacted to immediately by increased anxiety and insecurity. The stutterer is helpless in the difficult speech situation and, with the memories of past rejections and embarrassments, he wishes only to throw himself at the mercy of his listener, so to speak, and to be unstintingly reassured and tolerated. (These attitudes may or may not carry over into his other interpersonal relationships, but undoubtedly in the difficult speech situation they are present at the moment of the stuttering act.)

What other attitudes does the stutterer have toward his listener? Often in a speech clinic where pseudo-stuttering or 'faking' is used as a device to help modify the form of the stuttering block, the stutterer, after his first successful 'faking' assignment, may be heard to express a good humored satisfaction at having caused his audience some embarrassment. 'I've sweat blood for years trying to talk to that guy,' is a common remark. 'Now I made him squirm for a few minutes.' Can it be that such a remark made in jest, reveals a strong, underlying attitude? Or are we to assume that the stutterer has only loving, tender feelings toward one whose mere presence may fill him with panic? It is the writer's opinion that the stutterer has a great deal of repressed hostility toward the listener at the moment of the stutter-

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ing act. Such an attitude is not hard to understand when we consider the multitude of rejections, the lost opportunities, the embarrassing episodes, and the feelings of inadequacy, to mention only a few of the emotional traumata which years of stuttering produce.

Neither is it difficult to understand why this hostility must be repressed. A need for the listener's affection on one hand, and hostility toward the listener on the other, are somewhat opposite in nature. The coexistence of two such psychological opposites frequently leads to a repression of one of the two. The stutterer's security in the helplessness of the difficult speech situation is based on the affection and approval of his listener. Any hostile impulses toward his listener are a direct threat to the stutterer's security. In addition, while there are strong psychological reasons for this hostility, the reasons are not rational in the sense that they can be accepted intellectually. Therefore, the hostility is repressed in most cases.

Repressed hostility of this sort often leads to a feeling of guilt with respect to the unconsciously hated person. These guilt feelings may be reinforced by an unconscious hostility toward a parent or sibling who at one time rejected the stutterer because of his speech defect. As has been observed repeatedly, such unconscious feelings of guilt carry with them an unconscious need for punishment to atone for the guilt.

It is suggested that in some cases part of the stutterer's unconscious reluctance to discard his secondary symptoms while undergoing treatment may be explained by a need for self-punishment to atone for guilt feelings toward the auditor.

II

The question will now be discussed as to how this can be applied in a practical way.

First, an attempt should be made to render conscious this hostility, if it exists. Although psychotherapy is an individual affair and few general rules can be laid down which will handle each situation as it arises, it can be said that hostility should be brought into consciousness gradually and with caution. Too sudden recognition of hostility on the part of the case may lead, on the one hand, to a burst of antisocial activity, or, on the other hand, to increased guilt with a depressed reaction. It would seem that, in many cases, an ideal opening wedge would be found at the moment when the stutterer expresses some satisfaction at having embarrassed a listener by 'faking'. The question, 'Why do you think you feel this way?' might lead to the beginning of an exploration of the underlying hostility. Also, if there exist guilt feelings arising because of hostile impulses toward a parent or sibling who once rejected the stutterer, these should be worked through.

It should be stated that psychotherapy along these lines is dangerous in unskilled hands. It should be undertaken only by an experienced therapist. The safest and also the most effective method is by skillfully directing the therapeutic interviews so that the stutterer brings up the hostility himself, in his own words. This may be slow and tedious, but it has two definite advantages: (1) The stutterer will tend to bring up only as much hostility as his own ego can support at any one time. The danger of overwhelming the stutterer with more hostility than he can stand is thus minimized. (2) If he brings up the hostility himself, it will be his own discovery and he will accept it. There will not be the tendency for the stutterer to think that the therapist has superimposed interpretations on him that are not true.

Once the hostility has been rendered conscious, it must be dealt with. This can be achieved to the advantage

of the stutterer's therapeutic attempts through sublimation. Many stutterers feel that they are imposing on a listener by working on their speech in his presence. (This may be a reaction-formation.) For example, a stutterer may be trying to eliminate 'forcing' as a symptom but may explain his failures by saying that when he tries to stutter without 'forcing,' it seems to make the block last longer and he vaguely feels that he is not doing his best to alleviate his listener's discomfort. The stutterer's hostility may be diverted into a useful channel by expressing itself in a tendency to disregard his listener's immediate embarrassment and by taking a more farsighted view of the benefit society will receive from his eventual rehabilitation.

SUMMARY

In this article it is suggested that guilt feelings arising from repressed hostility toward the listener may contribute in some cases to the adult stutterer's unconscious reluctance to part with his secondary symptoms while undergoing therapy. Some suggestions are made as to the therapeutic application of this material.

News and Announcements

Miriam D. Pauls*

An informal meeting of audiologists and interested friends from the East Coast area was held at the Hearing and Speech Clinic, U. S. Naval Hospital, Philadelphia on Saturday, September 27, 1947. This meeting was originally planned to bring together a small group of workers in the field of aural rehabilitation for a general discussion of pertinent problems in audiology. A few invitations were extended to individuals who had expressed an interest in attending such a meeting, and it is significant that nearly a hundred people were there.

The following groups and organizations were represented: Audiology Center, Walter Reed General Hospital, Washington, D. C.; Aural Rehabilitation Unit, Veterans Administration, New York, N. Y.; Hearing and Speech Clinic, U. S. Naval Hospital, Philadelphia, Pa.; Department of Medicine and Surgery, Veterans Administration, Washington, D. C.; Vocational Rehabilitation, Veterans Administration, Philadelphia, Pa.; Department of Otolaryngology, Johns Hopkins University, Baltimore, Maryland; Department of Otolaryngology, University of Pennsylvania, Philadelphia, Pa.; Department of Otolaryngology, Yale University School of Medicine, New Haven, Conn.; Pennsylvania School for the Deaf, Philadelphia, Pa.; New Jersey School for the Deaf, West Trenton, New Jersey; American Hearing Society, Washington, D. C.

Captain Fred Harbert (MC) U. S. Navy, Chief of the Eye, Ear, Nose and Throat Service at the Naval Hospital, led the morning session with a discussion on medical and psychological aspects of audiology, with major emphasis on psychogenic deafness and the fenestration operation.

In the afternoon, Dr. Norton Canfield, Chief Audiologist, Veteran's Administration, recently returned from Europe where he attended Otolaryngological meetings in Belgium and in England, gave a brief report on the progress in the field of audiology in Europe. This was followed by a discussion of the problems of veteran audiology in this country. The remainder of the afternoon session was taken up by a generalized discussion of audiological teaching and testing techniques and research in progress.

Such interest was aroused that plans are being made for a second informal meeting to be held in New York City in January.

The American Academy of Ophthalmology and Otolaryngology held its fifty-first annual session at the Palmer House, Chicago, Illinois on October 13-18th.

The Scientific Program of the Committee on the Conservation of Hearing was held on the evening of October 12th. Dr. L. J. Linck, Chicago, spoke on 'Mobilizing Resources for Hearing Rehabilitation.' Mrs. Spencer Tracy, Los Angeles, discussed 'The Pre-school Deaf Child,' and Dr. Norton Canfield, New Haven, presented the U. S. Army Medical Corps movie 'To Hear Again.'

On Thursday afternoon, Dr. Herbert Koepp-Baker, Chicago, presented a paper on the rehabilitation of the laryngectomized. Dr. Paul Moore, Evanston, and Dr. J. W. McCall, Cleveland, were the discussants.

The University of Oklahoma, under the direction of the Speech Department, is setting up a Speech and

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Hearing Clinic in the School of Medicine in Oklahoma City. The clinic will serve the Veterans Administration, the Commission for Crippled Children, Public Health, and Vocational Rehabilitation, in addition to the general public of the state. The Speech Clinic will be under the direction of Dr. Carl Ritzman, while the hearing phase of the program will be under the guidance of Dr. John Keys. Miss Margaret Wise has been employed as speech correctionist, Mr. Laurel Schendel as acoustic expert, Mrs. Mamie Reilly as training teacher, and Mr. Bill Gresham as acoustic engineer. The Clinic itself is located in the Crippled Children's Hospital. A new soundproof room is being completed and other rooms have been allocated for clinical purposes. Certain funds were made available through the Commission for Crippled Children for the purchase of special testing equipment. The Clinic went into operation about October 1. A duplicate service is offered on the University Campus at Norman which is designed to serve primarily the student body of the University and to furnish laboratory material for teacher training and research.

Rockford college marks the beginning of a second century of liberal education with the beginning of graduate study in certain areas of knowledge of especial professional interest to women and for which the college is particularly fitted to give training. Of particular interest is the graduate program in speech re-education, leading to the degree of Master of Science. The program is not offered to compete with those large universities serving varied professional interests and purposes. It is offered to fill in the graduate field the same place held in undergraduate training by the small, liberal arts college.

The emphasis upon speech re-education at Rockford College has increased steadily since the study was first initiated in 1926. Allied departments in psychology, biology, physics, chemistry and education have cooperated in teaching and research in this field. In addition to a private clinic, a year-round speech center is maintained through coperation with the Division of Vocational Rehabilitation of the State of Illinois. Working relationship with the National Society for Crippled Children and Adults and with local schools, social and medical agencies in the area offer students opportunities for varied professional experiences.

The first meeting of the newly founded New York Society for Speech and Voice Therapy was held on October 8th in the Academy of Medicine. Dr. Froeschels lectured on the topic: 'Should The Speech Therapist Be a Voice Therapist and Vice Versa?' The Society has been organized to promulgate the most modern knowledge and to stimulate further studies concerning speech and voice disorders, their underlying causes as well as their treatment.

The Society will sponsor monthly lectures on subjects of scientific and practical interest in the field of speech and voice therapy. These lectures will be accompanied by actual demonstrations of clinical cases—a special feature which will enable active therapists to raise controversial questions and bring forward new methods of treatment.

There are two kinds of membership in the Society: general and supporting. According to the bylaws, general membership is open to all persons who are interested in the practice, study, or teaching of speech and voice therapy and who, in addition, have any of the following qualifications:

1. A degree from any recognized college or university in speech or an allied subject.
2. A degree in medicine from a recognized institution.
3. A position teaching or pursuing the clinical study of speech and/or voice defects in a recognized institution.

Supporting membership is open to all persons of good moral conduct who are interested in the work of the Society.

Dr. Emil Froeschels is the president of the organization. The Advisory Board is made up of a group of interested medical specialists.

The third annual Speech Correction Conference at the University of Missouri was held on October 3 and 4. The conferences are sponsored by the University of Missouri, the State Department of Education, The Missouri State Board of Health, and The State Crippled Children's Commission. Mr. Richard Dabney, Director, Division of Special Education, State Department, discussed 'Missouri's Services to Speech-Handicapped Children.' Dr. Robert West was the guest speaker for the Friday evening session. The Saturday morning session was devoted to consideration of special problems in speech rehabilitation— cerebral palsy, cleft palate, and the deaf and hard of hearing. Demonstrations of classroom and clinic techniques for these types of problems were given in the afternoon.

The Minnesota Mobile Speech Clinic is now starting its second year of travel in its scheduled three-to-five year study of the speech and hearing needs of the children of the state. Last year it travelled 15,500 miles, covered five of the states, 87 counties, and reported on the needs of 27,500 children. This year it is planned to double these figures.

Miss Laila Larsen is the field chief and has a staff of four assistants. Miss Virginia Worthington and Miss Gertrude Russell are serving for the second year, while Miss Irene Hepola, University of Minnesota, and Miss Joyce White, University of Ohio, have been recently appointed as speech and hearing clinicians. Miss Anita Bronken holds the post of field secretary.

Miss Larsen has presented some interesting findings in her first annual report on the incidence of deafness and speech disorders.

Of particular interest are two forward steps that have been taken to meet needs that have been disclosed in the survey. First, the staff has begun to assemble vocational interest material in the field of special education to present to high school students in an effort to guide more young people into the profession. Second, the success of the 1947 summer camp of the Minnesota Society for Crippled Childen and Adults with some 53 speech defective children in a concentrated two-week training program is being evaluated. It may well be the solution for the rehabilitation of the isolated hard of hearing and speech defective child.

The Junior League Speech School in Atlanta, Georgia, is rapidly growing under the direction of Miss Mary Rose Costello, the Executive Director. It now does all the speech work for the Georgia Crippled Children's Society. They are working with cerebral palsy cases as well as other types of speech and hearing disorders. They have recently received an anonymous gift of $125,000 toward their Endowment and Building fund.

The Cerebral Palsy Center at the Hospital and Home for Crippled Children in Newark, N. J., has a group of 40 children ranging in ages from 18 months to 16 years receiving instruction and treatment each week. There are two occupational therapists, a recreational worker, and a speech correctionist. Mrs. Helen Fagan Bender, who was on the staff of Central Institute prior to her marriage, is doing the speech work.

The official dedication of the National Speech Improvement Camp was held on August 9, 1947. The athletic field was dedicated to the memory of William Bilto who died this past win-

ter. Dr. Bilto served as a member of the camp staff for more than ten years. John Clancy and his staff have made a real contribution to the Speech Correction Association as well as to the many boys who have attended the camp.

A pamphlet designed to meet the needs of the parents and teachers of the child with a speech or hearing impairment has been compiled by the staff of the Minnesota Mobile Speech and Hearing Clinic. The pamphlet is to be distributed by the Minnesota Society for Crippled Children. Any requests for copies should be directed to Mr. H. R. Gabrielson, Executive Director, Minnesota Society for Crippled Children and Adults, Inc., 2524 Hennepin Ave. South, Minneapolis 50, Minnesota.

The Pennsylvania Speech Association held its annual convention at Harrisburg on October 3rd and 4th, 1947. The association is composed of people in the state interested in speech arts and speech and hearing problems. Among the topics covered were teacher training, the hearing handicapped, and cleft palate speech. Dr. Joseph O'Brien is the Executive Secretary of the organization.

One of the most interesting educational developments in the Southwest has been the rapid growth of the Pilot Institute for the Deaf, Dallas, Texas, which is dedicated to speech and lipreading for the pre-school deaf child. On its fourth birthday, Mr. and Mrs. T. Leonard Bradford, Jr., presented their $300,000 estate to the institute to provide permanent quarters. This gift includes a red brick twenty-room mansion and eight acres of beautifully landscaped lawns, a five-car garage and a small brick cottage.

The gift furthers the work and plans of other Dallas citizens. The Dallas Pilot Club, a group of thirty-five business women, established the first Pilot Institute for the Deaf during the summer of 1943 with one instructor and a small class of children. At present there is an enrollment of nearly 40 children, with a staff of four trained instructors, one assistant, teachers for art and rhythm, and two nursery attendants.

The Institute also has the personal and financial backing of the Kiwanis Club. Various professional men contribute their services to provide a medical staff, legal counsel, and the auditors.

An important innovation in the school's new quarters will be a clinic where babies may be tested for deafness along the lines advocated by Dr. and Mrs. A. W. G. Ewing of the Department of Education for the Deaf, Manchester University, England.

Dr. Romaine Mackie, formerly consultant on education of the physically handicapped for the California State Department of Education, has been appointed Specialist for Schools for Physically Handicapped Children, U. S. Office of Education.

In announcing Dr. Mackie's appointment, Dr. John W. Studebaker, U. S. Commissioner of Education, stated: 'Dr. Romaine Mackie is a welcome addition to the staff. Her wide experience will be available to all the states and cities in which several millions of physically handicapped children require special education techniques. The present widespread interest in special education programs would indicate that this field is on the brink of tremendous expansion. Each year, additional States are establishing State-wide supervisory programs for all types of exceptional children.'

The week of November 9 to 15 was set aside this year as 'National Hearing Week.' During that week, the governors of many states and the mayors of many communities turned their attention to the national hearing problem. The American Hearing Society has estimated that every person knows at least one to five persons who

are hard of hearing and has made a bid for nation-wide assistance in encouraging hard of hearing people to take immediate advantage of the expanding hearing conservation program. Special attention has been called to the value of watching children carefully for signs of hearing loss after illness involving nasal passages, ears or throat. In a recent press release, Dr. C. Stewart Nash, President of the American Hearing Society, quoted an estimate that 'one out of every ten persons in America has a hearing loss, ranging from a slight loss to almost total deafness.' Dr. Nash recommended that a vigorous hearing conservation program be put into effect in the school systems of the nation.

Growing national acceptance of nursery schools and kindergartens as the initial unit of elementary education in our schools has been reported recently by the U. S. Office of Education. If professional and lay organizations put their announced policies and programs into practice, the next ten years will show substantial increase in and improvement of programs for young children. The increased birthrate, the larger percentage of women workers, and the increased concentration of children in cities are reported as factors contributing to the need for extending programs for younger children. A more detailed discussion of this subject may be obtained by purchase of a bulletin entitled 'Schools for Children Under Six.' This bulletin may be secured by sending 20 cents to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

The Reading Clinic of Temple University, Philadelphia, has announced a three-year evaluation program of Reading Clinic Institutes. This series of institutes began in 1947 with a program in which emphasis was placed on the *general language* approach to the reading problem. The *content area* approach to problems of reading will be the theme of the 1948 (February 2 through 6) institute. In 1949 the emphasis will be directed toward the *semantic*, or *meaning*, approach.

Seminars, demonstrations and evaluations will be made by well-known specialists in reading and related fields. Activities of the one-week institutes are differentiated to meet the needs of clinical workers, vocational guidance directors, and teachers in elementary and secondary schools and colleges. Enrollment is limited by advance registration. For a copy of the program and other information regarding these institutes, write to Dr. Emmett Albert Betts, Director of the Reading Clinic, Temple University, Philadelphia 22, Pennsylvania.

A speech therapy conference will be held by the College of Speech Therapists September 20 through 24, 1948, at the Royal Society of Medicine, 1 Wimpole Street, London, W. 1. Representatives from the United States and other countries are invited to submit fifteen-minute-long papers for inclusion in the program, and papers must be in not later than March 1, 1948. Topics to be covered include speech therapy, stuttering, aphasia, dysphasia, speech clinics, the role of emotional problems in speech disorders, etc. Those wishing to receive a detailed program and conference membership application form or to obtain further information are asked to write The Conference Secretary, College of Speech Therapists, 68 Queen's Gardens, London, W. 2.

The Iowa Speech Correction Association was organized October 17 at a meeting in Iowa City. The meeting was attended by representatives of educational and social welfare agencies directly and indirectly interested in speech correction.

The following officers were elected: Dr. James Curtis, University of Iowa, President; Mrs. Velma Hiser, Grinnell College, Vice-President; Miss Marceline Smith, State Department of

Public Instruction, Secretary-Treasurer; and Miss Josephine Simonson, Iowa State Teachers College, Editor.

The second meeting of the group will be held in April, in connection with the convention of the International Council for Exceptional Children.

PERSONALS

Dr. Kenneth Scott Wood, Director of the Speech Correction and Hearing Clinic at the University of Oregon, has recently been appointed Associate Professor of Speech Pathology and Clinical Practice of that University.

With apologies to Dr. Mary Wehe Huber, editor of *Abstracts of Current Articles*, the *Journal* wishes to make a long-overdue announcement of the arrival of Kathleen Mary Huber on March 3, 1947.

Dr. S. Richard Silverman has been appointed director of the Central Institute for the Deaf. He fills the position left vacant in 1941 by the death of Dr. Max Goldstein, who founded the Institute.

Dr. Silverman has been at Central Institute since 1933 both as a student and as a member of the staff. In 1941 he was made business manager and registrar of the college. In 1946 he was promoted to administrative executive. He is an associate professor of education and a lecturer on audiometry at Washington University Medical School.

Miss Mildred McGinnis, head of the Speech Department, Central Institute for the Deaf, was selected as one of 49 women of achievement in St. Louis. She won recognition for her development of the Speech Department at the Institute, as well as for her work with congenital aphasia.

Miss Jane Irvine has joined the staff of the Hearing and Speech Clinic, University of Illinois Medical School, Chicago. While in service, Miss Irvine was connected with the Naval Hearing Clinic. This past year she was audiometrist for Dr. George Shambaugh.

Dr. Lee Doerfler has accepted a position on the faculty of Northwestern University as Instructor in Audiology. He was formerly on the staff of the Aural Rehabilitation Unit, Deshon General Hospital, Butler, Pennsylvania.

Fred Chreist has accepted a position on the faculty of the University of New Mexico, where he will organize and supervise a speech correction clinic and teach courses in that area.

Dr. Romaine Mackie of Columbus, Ohio, has been appointed Specialist for Schools for Physically Handicapped Children by the U. S. Office of Education. Dr. Mackie received her B.A. from the Ohio Wesleyan in 1920, her M.A. from Ohio State in 1932, and her Ph.D. from Teachers College, Columbia University. During her three and one-half years at Teachers College, she helped to organize and teach one of the first courses developed in this country in methods of teaching the crippled. From 1927 to 1936 she was a member of the Special Education Staff of the Columbus (Ohio) Public Schools, serving four years of that period as administrator of the School for Crippled Children. During her six years at Hunter College in New York City, Dr. Mackie was civilian coordinator, administering the Naval (Rehabilitation-Hospital Corps) training program. During this time she also developed a training program for teachers of the physically and mentally handicapped.

Miss Elizabeth C. MacLearie has been appointed State Consultant, Speech and Hearing Services, Department of Education, Nashville, Tennessee. Tennessee is developing plans to meet the needs of all its exceptional children.

Dr. Jean Utley has been appointed Assistant Professor of Audiology, Division of Speech and Hearing Rehabilitation of the Department of Otolaryngology, University of Illinois. Dr. Utley has been in private practice in Chicago.

Dr. Ernest H. Henrikson, book review editor for the *Journal*, has recently accepted a position as Associate Professor of Speech and Assistant Director of the Speech Clinic at the University of Minnesota. He will teach courses in speech pathology, direct research, assist in the clinical program, and have charge of the summer speech clinic. Dr. Henrikson was formerly Chairman of the Department of Speech and Director of the Speech Clinic at the University of Colorado.

(Continued on Page 443)

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Book Reviews

Ernest H. Henrikson, Editor*

MOORE, ROBERT H. *General Semantics in the High School English Program.* Columbus: Ohio State Univ. Press, 1945. Pp. 169.

In this opening paragraph of the Preface, Robert H. Moore describes the origin and objective of his *General Semantics in the High School English Program:*

> The present study grew out of the writer's conviction that at the present time English teaching in secondary schools is largely but needlessly unproductive. This unproductiveness is in part the result of the failure of the English teacher to lead pupils to an awareness of the relationship between words and their referents and of the influence of words on human beings. The study of general semantics offers a method of bringing to pupils this desired awareness and of increasing their skill in the use of language. The present writing attempts to show how general semantics can be made a part of the English program of the high school.

This, then, is the kind of book which calls for a sequel. What happens to the students who achieve both this awareness and skill in the English class? Do they carry over what they have learned to the other classes where they read, write, listen and speak? Are their evaluations of their lessons, themselves, and others made less disruptive, more incisive, less distorted? To have raised these questions is, in a way, the deepest sort of indirect praise I could give this book, because they presuppose a program. Moore has not only reviewed the published purposes of English study and summarized some facts and principles of the semantic discipline which bear thereon, but he gives 45 pages to a discussion of 'concrete applications' in which are set out 26 specific problems for class use. In short, Moore has taken a necessary first step, for a point of view which produces a means of implementing it must itself be judged by the results rather than by the theory. And that is why I hope another volume is produced in the Ohio State Graduate School Studies before too long.

The book does, however, pose a different kind of practical issue. Moore is quite aware of the selective character of the materials which he takes from the formulations of Alfred Korzybski, I. A. Richards, and others. He is, after all, not covering the field, but dealing with 'those aspects of semantics which are of especial significance so far as the high school English program is concerned.' Thus, for example, from the corpus of Korzybski's general semantics he chooses to emphasize that:

> (1) words may be used to misrepresent conditions or they may be used to represent nothing at all; (2) language and the human nervous system abstract some details of objects, persons, and events and omit others; (3) everything and everybody in existence are undergoing continuous change; (4) qualities do not reside in objects, persons, and actions, but are the products of a relation between the observer and what is observed.

There is, of course, much still to be dealt with and a host of other ways of working with this much. There are some who would question the wisdom of attempting to organize a program of instruction based on a few items of a comprehensive systematization. This reviewer does not share this view. If students develop patterns of evaluation in their talking, reading, etc., which make for confusion and ineffectiveness, then one must be grateful for any attack on them. I prefer not to choose between a thorough-going reorientation of evaluation habits and none, but between existing programs which neglect these matters and some efforts at reconstruction, no matter how restricted. This may be a philosophy of gradualism which moves hardly at all, but at least it offers a way of keeping the child from tripping as much as he does.

Teachers of speech (and others, too) have a stake, and they might well take an interest in what happens in the English class. If students who, for the most part, are exposed to more English than anything else in pre-college classes, have not learned something of what is involved in recognizing and achieving adequacy in the language function, that omission cannot be without influence in the commission of inadequacy later on.

IRVING J. LEE.
Northwestern University

TIFFIN, JOSEPH, KNIGHT, FREDERIC B., and ASHER, ESTON JACKSON. *The Psychology of Normal People.* Boston: Heath, 1946 (Revised Edition). Pp. 581.

This textbook in elementary psychology, stressing the behavior of normal people,

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gives some consideration to speech and speech problems. According to the authors, the book is intended for 'students who expect their four years at college to prepare them for acceptable service in business, industry, and the professions.' The material meets the needs of such students for general preparation but does not present specific information that would be of special interest to the student of speech or speech pathology.

The explanations are clear, and the sequence of topics is logical. The illustrative material is, for the most part, well chosen, although some of the tables may be difficult for the beginning student of psychology to interpret.

After defining the field of psychology, the authors present basic considerations of differences between people and between environments. They then discuss personality, intelligence, abilities and interests, feelings and emotions, learning, memory, perception, imagination, and reasoning. Each topic is developed in a separate chapter, with special emphasis on normal behavior. Occasional references are made to speech and hearing as they affect or are affected by the personality and environment.

Chapter XV, entitled 'Speaking, Reading, and Writing: How We Express Ourselves,' points out that 'language is necessary if thought or reasoning is to be anything more than that found in animals or very young children.' A brief description of the process of learning speech is followed by a discussion of speech and hearing disorders. Motor aphasia is dismissed as 'a medical rather than a psychological problem.' Stuttering is discussed in some detail and is described as essentially a psychological problem. Therapies are mentioned in their relationship to various theories on the cause of stuttering —the emotional, educational, psychoanalytical, and neurophysiological points of view being cited. Other problems, such as lisps, articulation faults, cleft palate, defective hearing, foreign language influence, and motor deficiencies are given brief mention. These points are directed primarily to the clinical psychologist; specific therapies to be used are not discussed.

Reading and writing problems are also considered in Chapter XV, and the relationship between defective reading and defective speech is mentioned.

The discussion of problems in speaking, reading, and writing is weakened by its brevity, and there are probably some who would question the need for this chapter in a textbook for an elementary course in psychology. However, although the beginning student may not profit greatly from this information, its inclusion—probably due largely to Dr. Tiffin's special interests —is encouraging to the speech pathologist. Those whose chief concern is with the abnormal should profit by frequent consideration of the normal. Although this book is not essential to the speech pathologist's bookshelf, it might well be on his reading list.

CHARLOTTE G. WELLS.
University of Missouri

LOVINER, D. G. and NICHOLS, E. D. *The Cerebral Palsied Child Goes to School.* Columbus: Ohio Soc. Crippled Children, Inc., 1946. Pp. 37.

The Division of Special Education, Ohio State Department of Education, sponsored a research unit the purposes of which were: '(1) to study educational, physical, and social performance and achievement' of cerebral palsied children, '(2) to determine the best techniques for teaching these children . . .' and '(3) to determine how great an expenditure of public funds might be justified for all such handicapped children.'

This little booklet is based on this research. It presents practical recommendations for the teacher or parent of a cerebral palsied child. Since reading occupies such an important part of the educational process, extra emphasis is given here to the suggested technique called 'non-oral beginning reading' which the authors recommend for cerebral palsied children. They give detailed descriptions of the method and of the transition stages to oral reading. Drawings of materials aid in an understanding of these methods of instruction.

The booklet has value for speech therapists since it describes the difficulties of the cerebral palsied child in his educational development, and at the same time gives suggestions, based upon practical experience and observation, for aiding in this development.

KATHERINE THORN.
University of Minnesota

JACOBS, ARTHUR T. *How to Use Handicapped Workers.* New York: National Foremen's Institute, Inc., 1946, Pp. 186.

Techniques for the use of the occupationally handicapped on jobs are presented in manual form. The material, concise, easy to read, and well-indexed, is principally based on research of the Division of Occupational Analysis by the United States Employment Service. It is intended primarily for foremen, supervisors, and personnel officials but is also of value to guidance personnel and counsellors who are concerned with the problem of placing the right person in the right job. The author states, 'These techniques are not applicable merely to the so-called "handicapped" worker, nor solely to job applicants. They are equally appropriate and of value when applied to every employed person whether handicapped or not.' Essential chapters deal with 'How to Make Physical Demands Analysis,' 'How to Analyze a Worker's Phys-

ical Capacities,' 'Placement and Follow-up.' The last half of the manual contains an alphabetical list of fifty-seven diseases and handicaps with concise and specific occupational evaluations. The occupational evaluations of individuals with hearing difficulties will be of value to employing personnel and may be of value to hearing clinicians. However, the paragraph devoted to evaluation of speech defects is too brief and obvious to be considered a contribution. For those interested in vocational rehabilitation and guidance, this handy, small manual will fill a real need.

LEON LASSERS.
Oregon State Department of Education

BRIN, JOSEPH G. *Speech and Human Relations.* Boston: Bruce Humphries, Inc., 1946. Pp. 166.

The nature of this book may perhaps best be conveyed from the following quotations which are taken at random:

> Speech training contributes largely to personal power and development of the personality. . . Since correct speech is the road to permanent emotional and intellectual development—the constant medium in human relations is self-expression for the sake of communication. . . Language originated from the desire for self-expression . . . a well modulated voice ringing with authority; a well prepared, orderly and clean cut message; a mastery of certain proved devices, including gestures . . . audiences are composed of human beings . . . a man needs self-respect, and no man is lost until he has lost his self-respect. It is, therefore, up to the speaker to show his respect for his audience. . . You have a world before you waiting to be instructed, consoled, inspired; it is hungry for your voice. Let your voice, then, be of great authority.

The chapter headings include such as: Fear and An Antidote: The Speaker Is Human; Words: used Singly, as Entities, in Unison; Elements of the Address; What Will You Talk About; Highlights in Review, Author's Final Words.

The book might be helpful to some laymen who are not concerned with the modern scientific facts and methodologies available for voice and personality development as related to communication. The book shows few signs of any familiarity with developments in the fields of speech education, speech science and psychology, and semantics during the past twenty-five years. Some such familiarity would seem to be imperative if the book were to live up to its title.

ELWOOD MURRAY.
University of Denver

BOGUE, BENJAMIN *N. Stammering, Its Cause and Cure.* Indianapolis: Hammond Press, 1929.

This book is written in four parts. Part I recounts the personal experiences of Mr. Bogue in his many and varied attempts to find a cure for his own stammering. All were unsuccessful until, 'starting where others left off,' to use the author's own words, he evolved his own system and 'cured' himself by this method.

Part II discusses the development of speech and presents a classification of speech deviations and their causes. The emphasis is on stuttering and stammering.

Part III is headed 'The Cure of Stammering and Stuttering.' In this section stress is placed on the Bogue Unit System. The system is described generally, and its many and ramified results are expounded. These results are attested to through the presentation of a number of case discussions.

Part IV is the final unit of the sales talk. It includes everything from a glorification of the joys of perfect speech to an explanation of how the Institute checks baggage for its students.

It is rather difficult to present an objective evaluation of this book. In a way it is not a book on speech correction in the usual sense of the term. Rather it is a sales talk for the Bogue Institute. As such it appeals strongly to the hopes and fears of "stutterers" and their parents. Without any evidence of undue modesty or reserve Mr. Bogue says, in effect, "I was a stutterer who tried the other methods of curing stuttering and found them wanting. I evolved a method which cured me. Come unto me all ye who stutter and I will (for a fee) not only relieve you of your stuttering permanently but will also as a by-product improve your health, give you new self-confidence and in general remake your life.'

There would be little or no value in going over this book in detail in an attempt to evaluate the many ideas presented in it. Each person can do this as he reads the book for himself. Essentially, as this reviewer sees it, speech pathologists may approach this book with two main questions in mind:

1. Does this book present new material or new interpretations or analyses of materials already presented? To this question this reviewer would have to answer an unqualified 'no.' Although Mr. Bogue purports to have 'started where others left off' he presents neither a clear picture of where others did leave off or whence he proceeded from that ill defined area.

2. Does this book present new and

valuable methods for helping those afflicted with stuttering (stammering)? Mr. Bogue claims to have a positive answer, an answer supported by several testimonials from former students lauding the benefits derived from working with him. Certainly anyone trained in even the most elementary analysis of propaganda will be able to evaluate such statements properly. Unfortunately, Mr. Bogue, probably for reasons best known to himself, has been unwilling to have his methods subjected to objective and impartial evaluation. In spite of Mr. Bogue's failure to cooperate, a disinterested group, The Better Business Bureau of Indianapolis, did conduct an investigation of the Bogue Institute. A report of findings from this investigation is essentially an answer to question 2 mentioned above. So the question will be answered with quotations from the report:

> All of this information leads definitely to the conclusion that a very large percentage of those who pay the fee and submit themselves to the Bogue Institute in the hopes of securing a cure for their stammering or stuttering are doomed to disappointment. Based on figures and information obtained in a survey of some ninety former students who had attended and taken the course within a two year period it is indicated that only approximately six per cent of them felt that they were cured. We have never been able to obtain any evidence to successfully contradict this information.
>
> Literature leads the prospect to believe that he will be enrolled in a large, well-equipped institution. Instead he finds that all the 'classes' are conducted in one large room used part of the time as a dance hall, and which has no 'equipment' whatever except chairs around the side of the hall.
>
> They were led to believe through letters and literature that Mr. Bogue gave the students his personal attention. Many have stated they have seen him but once at the time of enrollment; some have stated they have never seen him; some have stated they did not believe there was any Mr. Bogue; a number of others have stated that they have made an effort to see him personally, but were unable to do so.
>
> The examinations—entrance, progressive and final—referred to in his diagnosis, are not conducted on a scale effective enough to be able to tell whether the student is progressing or not.
>
> The tuition fee far outbalances what is actually offered in the way of instructions or accommodations.

This reviewer believes that every person who works with speech defectives must at least to some extent be his brother's keeper. His special 'brother' is the speech defective. The speech pathologist has a responsibility to see to it that the speech defective receives the best care possible and is not misled into futile and discouraging expenditures of time and money. Thus this reviewer believes that every speech pathologist should read Mr. Bogue's book carefully and should also read the report of the Better Business Bureau of Indianapolis. He should do everything possible to make sure that all stutterers in his community and their parents know about this report and the evaluation of Mr. Bogue's method which it presents.

ERNEST H. HENRIKSON
University of Minnesota

MULGRAVE, DOROTHY I. *Speech for the Classroom Teacher.* New York: Prentice-Hall, 1946. Pp. 423.

This book is written for classroom teachers-in-training who do not intend to be special teachers of speech or speech correctionists. Two aims are apparent in the content and organization of the book: personal speech improvement on the part of the teacher-in-training, and the presentation of information and method for furthering the speech growth of children in the classroom, including the correction of minor speech defects. Many teacher training institutions require students to take courses with these two aims in view. Often the two aims are combined in a single course. There is, therefore, undoubtedly a need for a text of this type.

'This book sets forth the most pressing problems of the classroom teacher with regard to speech; describes the mechanism of speech; stresses the value of a scientific approach to language; analyzes the sounds of English; discusses the problems of oral interpretation and dramatics which most frequently confront the teacher; describes newer methods of group discussion, such as the socialized recitation, the panel, and the forum; discusses speech pathology, including functional, organic, and emotional disorders, with suggestions for corrective procedures; presents practical problems in speech for all teachers; and contains extensive exercise material, bibliographies, and a wide variety of selections for oral interpretation at all levels.'

The broad coverage which the book attempts, and the scanty development of some of the topics, suggest a handbook style. The extensive references in each chapter should be helpful to students who desire more detailed information on a subject than the book provides. The book is divided into five parts as follows: The Problem, The Speech Mechanism, The Scientific Study of Lan-

guage, Speech Pathology, and The Speech Arts.

Part I (12 pages) deals briefly with 'The Elements of the Teacher's Speech Problem' from the point of view of the child as well as the teacher, and discusses such factors as imitation, environment, communication, semantics, artistic aspects, personal speech problems, and the responsibility of the teacher. Stress is given to the need for good speech on the teacher's part, and for the ability to help students attain good speech. These suggestions are based on the premise that 'Every teacher is, in effect, a speech teacher.' A detailed and carefully planned voice and speech check-list which many teachers should find helpful is included in this section.

Part II, dealing with the 'Mechanism of Voice and Speech' (32 pages), is brief and provides little more than a list and description of the parts of the speech mechanism. Some points are so briefly developed as to leave doubt as to their accuracy. The following statement, for instance, "The size and shape of the mouth are determined largely by the lips, the muscular activity of which is capable of changing the size of the opening of the mouth and of the cavity itself," suggests that activity of the mandible is not of much importance in changing the size of the mouth cavity. The hyoid bone is said to support the tongue and to serve as an attachment for some of its muscles. Nothing is said about the thyrohyoid membrane which connects the hyoid bone with the larnyx. An accompanying figure, however, shows the thyrohyoid membrane but does not show the tongue attachments which were referred to in the discussion. This chapter in itself would hardly provide the student with a working knowledge of the mechanism of speech. The bibliography, however, provides well selected references for further study. Chapters on training the voice and articulation are also included in Part II. Excellent suggestions are given for relaxing the body, breathing, for improving voice quality, and for exercising the lips, tongue and palate. These should be very helpful to teachers.

Part III, 'The Scientific Study of Language' (122 pages), is extensive and complete, and occupies, with the exercises and materials for practice, about one-third of the book. It provides a thorough and clear discussion of the phonetic approach to language, the vowels, consonants and diphthongs, and provides excellent exercises and practice materials which should be of great help to teachers in improving their own speech and in helping students. A statement on page 60, "Neither of these sounds resemble the final consonant *sing* . . .", is undoubtedly a printing error. Students in the general American speech area might find the Eastern phonetics somewhat confusing, and unnecessary controversy might be precipitated over the treatment of such controversial sounds as *r*. Students who 'insist on saying all their *r*'s,' would find difficulty in interpreting the 'rules' for the *r* sound which require that it should be silent before consonant or a pause as in 'charm,' included when a word ending in *r* is followed by one beginning with a vowel as in 'over and above,' and that the final *r* should be dropped if the next word begins with a consonant as in 'her sister was going.'

Part IV, 'Speech Pathology' (39 pages), is a brief introduction to the nature and treatment of functional, organic, and emotional speech disorders. Corrective procedures are given for the treatment of functional speech problems such as 'baby talk,' the various types of lisping, 'vulgar speech,' certain types of foreign accent, and regional dialect. This discussion of organic speech disorders is perhaps sufficient to acquaint the teacher with some of the major problems of this type as a basis for making referrals and for more effective cooperation with the speech specialist. The inclusion of a discussion of hearing problems and of central nervous system disorders would help to round out the teacher's understanding of organic problems. The bibliography again is excellent.

Part V, 'The Speech Arts' (167 pages), covering oral interpretation, dramatics, public speaking, group discussion and radio is sufficient to introduce students to these various forms of the speech arts. The chapters on oral interpretation contain excellent and rather extensive exercises and selections for practice. The chapter on dramatics contains, in addition to a bibliography, a selection of plays for elementary, junior high, and high schools as well as for colleges.

Teachers of speech who offer courses designed to improve the speech of teachers-in-training, as well as to provide them with knowledge of how speech can be used and taught in the process of education, will find much material of value in this book. It is broad enough in its coverage to be adaptable to many types of teaching emphasis.

E. C. Fossum
Iowa State Teachers College

JOURNAL OF SPEECH DISORDERS, 1947, **12**, 442-443

Abstracts of Current Articles

Mary Huber, Editor*

RUEDI, L. and FURRER, W. Physics and physiology of acoustic trauma. *J. acoust. Soc. Amer.*, 1946, **18**, 409-412.

These Swiss authors present a brief preliminary account of an experimental investigation of 'the 4000-cycle dip' and describe an ear defender (U. S. patent applied for).

Experimental deafening of human ears by exposure to intense pure tones showed changes in the perception of pitch as well as the expected threshold shift, except for the stimulus tone of 4000 c.p.s. The pitch change was upward for stimuli below 4000 c.p.s. and downward for stimuli above that frequency. Exposure to intense complex tones produced the 4000-cycle dip only when the stimulus tones included components both above and below 4000 c.p.s.

The authors conclude that for stimulus tones below 4000 c.p.s. in frequency the lymph in the cochlea flows (or whirls) in one direction (towards the helicotrema) and flows in the opposite direction for stimuli above 4000 c.p.s. When the stimulus contains components both above and below 4000 c.p.s, the opposing streamings produce a mechanical pull which causes localized damage to the basilar membrane at the point of localization for 4000 c.p.s. Since industrial noise and explosions always contain components both above and below 4000 c.p.s., the 4000-cycle dip is typical of every kind of acoustic trauma.

The ear defender described consists of a perforated shell which covers the entire external ear and is held in place by a headband. It attenuates sounds above 2000 c.p.s. by 25 to 30 db. and also reduces the steepness of wavefronts from explosions. It has been successfully tested on men and animals. (*William J. Temple, Brooklyn College.*)

STEINBERG, J. C., and FRENCH, N. R. The portrayal of visible speech. *J. acoust. Soc. Amer.*, 1946, **18**, 4-18.

The portrayal of speech in visible patterns involves a frequency-intensity-time analysis of the sound, somewhat analogous to that performed by the ear, and an orderly and legible display of the results to the eye. The authors discuss the procedures for accomplishing this in relation to the legibility of printed material (stationary and moving), the characteristics of speech and its interpretation by the ear.

The conclusions are summarized in the following procedures: (a) The employment of a frequency range from 70 to 4000 cycles subdivided into from 15 to 20 channels each of equal importance to intelligibility and each subtending a vertical visual angle of about 3.5 minutes in the display. (b) The use of display screens having angular speeds in the range from 200 to 400 minutes of arc per second and widths, in the direction of motion, sufficient to display simultaneously some 50 phonetic characters .(c) The use of fast acting automatic gain control and frequency equalization designed to bring the principal frequency components of all speech sounds to a common brightness level. Not all of these procedures are followed in the present devices. (*William J. Temple, Brooklyn College.*)

STEVENS, S. S., MILLER, JOSEPH, and TRUSCOTT, IDA. The masking of speech by sine waves, square waves, and regular and modulated pulses. *J. acoust. Soc. Amer.*, 1946, **18**, 418-424.

The ability of three standard wave forms to mask speech, by raising the threshold of perceptibility, was measured as a function of the intensity and frequency of the masking signal. The threshold of perceptibility was defined as the minimal level of speech at which the meaning of connected discourse could be followed by trained listeners exerting attentive effort. The speech (high-fidelity recordings of passages from Adam Smith's *The Wealth of Nations*) was presented to the observer through earphones; the interfering signals were electrically mixed with the speech signals.

For sine waves the most effective masking frequency is about 300 c.p.s. when the waves are of high intensity; at low intensities the masking is most effective at about 500 c.p.s. Square waves of the same sound pressure level are more effective in masking speech than sine waves, and are less critical as to frequency and intensity. Pulses of 10 microsecond duration are more effective than square waves. At 1000 c.p.s. and above, all three wave forms mask speech approximately equally. Above 2000 c.p.s. all are very ineffective.

When 10-microsecond pulses are separ-

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ated by random intervals, the interference resembles that of radio static, and the masking effect is greatly increased. (*William J. Temple, Brooklyn College.*)

WIENER, FRANCIS M. and ROSS, DOUGLAS A. The pressure distribution in the auditory canal in a progressive sound field. *J. acoust. Soc. Amer.*, 1946, **18**, 401-408.

With a small, flexible probe tube coupled to a Western Electric Type 640-AA miniature condenser microphone, the authors measured the sound pressures for stimuli in the frequency range from 200 to 8000 c.p.s. at the eardrum, at the entrance of the external acoustic meatus, and at a point about halfway between these two positions. The free-field measurement was taken at a point in space corresponding to the midpoint on a line joining the two ears of the subject. Measurements were made with the subject facing the source, and at angles of 45 and 90 degrees. The results are expressed as ratios of the sound pressures.

Over most of the frequency range the sound pressure at the eardrum is greater than the free-field pressure. The ratio reaches a maximum of about 17 to 22 db. near 3000 c.p.s. This effect is attributed to the combined effects of the diffraction of the sound waves about the head and pinna and the resonance of the auditory canal. The amplification of the ear is greater as the ear is turned to face the source of sound. When the subject faces the loudspeaker the acoustic gain of the ear is further increased in the range between 1000 and 3000 c.p.s. by cupping the hand around the pinna.

The ratio of sound pressure at the eardrum to sound pressure at the entrance of the canal shows a 10 db. peak at about 4000 c.p.s. This effect is attributed to the resonance of the auditory canal, its length being approximately one-quarter wave length at that frequency.

With the ear canal blocked, the ratio of sound pressure at the entrance to the free-field sound pressure is taken to show the effect of diffraction about the head. The results resemble those of diffraction about a rigid sphere of comparable dimensions. Such diffraction seems to account for only a small part of the acoustic gain shown by the ear.

The ratio of the sound pressure at the midpoint to the sound pressure at the entrance of the ear canal shows a peak near 3500 c.p.s. and a minimum of —15 db., indicating a pressure node at the midpoint for tones in the vicinity of 7000 c.p.s

In a brief appendix the authors show that there is satisfactory agreement between their measurements and the simple theory of resonant tubes. (*William J. Temple, Brooklyn College.*)

News and Announcements

(Continued from Page 436)

Miss Madeline Bowers has been appointed Instructor in Clinical Speech, Division of Speech and Hearing Rehabilitation of the Department of Otolaryngology, College of Medicine, University of Illinois.

Louis M. DiCarlo has been appointed Assistant Professor of Education and Audiology at the School of Education, Syracuse University. Professor DiCarlo will assume responsibility for the development of the Syracuse program for the education of teachers of the Deaf and Hard of Hearing. He will also develop the educational program for the Conservation of Hearing Center at the University. Mr. DiCarlo was formerly Director of Special Education in New Rochelle, N. Y.

At the beginning of the fall semester, Spencer F. Brown (Ph.D., Iowa; M.D., Minn.) joined the speech pathology staff at the University of Iowa as Associate Professor of Speech. He came to the University of Iowa from the Walter Reed Hospital in Washington, D. C., where he held the rank of Captain in the U. S. Army Medical Corps. He had formerly interned in Pediatrics at Johns Hopkins. At Iowa he will have charge of the outpatient services, teach training courses in the treatment of organic disorders and carry on a research program.

Professor Charles R. Strother is now on the staff of the University of Washington, Seattle, where he is in charge of the clinical psychology program in the College of Medicine and the Department of Psychology. He resigned his position as Associate Professor of Psychology and Speech at the University of Iowa, effective September 1 of this year.

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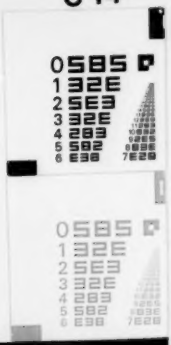
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